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KANT'S THEORY OF THE A PRIORI FORMS OF SENSE.

THE problem of the *Critique* is the possibility of *a priori* knowledge. For the solution Kant claims the merit of absolute demonstration from principles *a priori*. This claim, on general considerations, we have shown to be a usurpation which nothing can legitimize. It is a significant corroboration of this criticism that while the entire system, in its organization, constitution, and complexion, is determined by the opposition and correlation of sense and understanding, that distinction itself is nowhere established. We are simply told "that there are two stems of human knowledge, which perhaps may spring from a common root, unknown to us, namely sensibility and understanding."[1] In our consciousness, however they may lie below it, the functions of these two "stems" are perfectly distinct and separate. Like the sexes, the one is characterized by passivity, the other by activity. Receptivity is the function of sense, spontaneity of understanding. By the former, objects are given, by the latter, they are thought. The various kinds of *a priori* knowledge, therefore, are all conditioned by the different forms of relation into which these two factors enter with one another. And the *Critique*, following custom rather than any particular method, begins with the consideration of sensibility. The determination of space

[1] Introduction to *Critique*, III, 52 (13).

and time as the *a priori* forms of sense-perception, the explanation of mathematics as the apodictic science of these forms, and the demonstration of the subjective or phenomenal character of all spatial and temporal objects, form the subject-matter of Kant's doctrine of sense, or what in scholastic terminology he calls the *Transcendental Æsthetic.*

Of the main problems of the *Critique*, the *Æsthetic* takes up the question, How is pure mathematics possible? It furnishes a solution of this question, along with a proof of the presupposition on which that solution depends, and of the consequences to which it leads. What especially calls for explanation is the objective validity of this class of knowledge, which, as we have already seen, Kant holds to be *a priori*, or mind-originated, because it is absolutely certain and necessary. But here, as in every case of *a priori* judgments, we must inquire also into the grounds of the possibility of synthesis between subject and predicate. And with this inquiry it will be more convenient to begin.

Earlier thinkers had escaped this problem by treating mathematics as a system of analytic judgments. Given concepts (definitions) of the various geometrical figures, they regard the demonstrations of their properties and relations as mere acts of logical analysis. It is the merit of Kant, though Descartes and Locke may have anticipated his classification of judgments into analytic and synthetic, to have first discovered the true character of mathematics as a body of synthetic propositions, and to have pushed into the foreground of modern philosophy the problems of the possibility of synthesis. Now, whatever else may be necessary for genuine synthesis, its *sine qua non* is perception. Thought alone is inadequate to its production. "In the whole domain of pure reason, in its purely speculative use, there does not exist a single directly synthetical judgment based on concepts."[1] The synthetical judgments of mathematics, on the other hand, depend upon "the *construction* of concepts,"[2] that is, upon acts of perception which enter alike into definitions, axioms, and demonstrations. But these percepts in which the concepts of mathematics are presented cannot be empirical, for,

[1] III, 491 (631). [2] III, 478 (611).

though empirical perception would account for synthesis in certain synthetic judgments, it could not produce the absolutely apodictic and necessary synthesis of mathematical judgments, a synthesis which is, in fact, "*before all experience* or individual perception."[1] If then mathematical, like all other synthesis, depends upon perception, and yet is independent of empirical perception (actual measuring or counting), we cannot escape the conclusion "that *some pure* [*i. e., a priori*] *perception* must form its basis, in which all mathematical concepts can be exhibited or constructed *in concrete* and yet *a priori*."[1] This, since mathematics gives us apodictic synthetic truths, is "the first and highest condition of its possibility."[1]

But is this supreme condition actually fulfilled? How is it possible for the perception of an object to precede the object itself? Are not all perceptions furnished us by sensibility—which is just the capacity of receiving such presentations according as we are affected by objects? And, if so, where is there room left for pure or *a priori* perceptions? Manifestly only as 'forms' into which the 'matter' brought by the senses from the object is received. "The matter only of all phenomena is given us *a posteriori*; but their form must be ready for them in the mind *a priori*."[2] In these forms, then, which, as belonging to sense are perceptive, and as sense-inherent, not sense-derived, are *a priori*, we have the supreme condition for the synthesis of mathematical judgments. Their objective validity is a different question, which is to be explained later.

The pure forms of perception are not deduced, or their number determined, from any ultimate principle, as Kant's boast of method would lead one to suppose. It is simply asserted that "space and time are the perceptions which pure mathematics lays at the foundation of all its cognitions."[3] And if pure mathematics is to be explained, space and time at least must be shown to be *a priori* perceptions. That they are so, the *Critique* proves by arguments adopted from the *Dissertation* of 1770, which

[1] *Prolegomena*, §7 [IV, 30 (42)].
[2] III, 56 (18).
[3] IV, 31 (44).

again were anticipated, in the case of space at least, by the essay of 1768, *On the First Ground for the Distinction of Regions in Space*. The demonstration consists of an analysis of the ideas themselves. Space and time, it is held, cannot be derived from experience, for unless they were already implied in experience *a priori*, it would have nothing from which we could possibly derive them. And as space and time are non-empirical, so, in the second place, they are necessary; for, though we can think away everything in space and time, these themselves remain as *a priori* grounds of perception. Thirdly, space and time are not concepts, but percepts. For there is only a single space and a single time, and an idea to which only a single object can correspond is a percept. And, again, the relation of space and time in general to particular spaces and times is that of a perceptive whole to the parts included *in* it, not that of a notional whole or class to the individuals included *under* it. Fourthly, space and time, as infinite magnitudes, are percepts; for no concept or notion can contain an infinite number of parts *in* it, though it may, as type, embrace an infinite number of different individuals *under* it.

Space and time as *a priori* perceptions solve the problem of mathematical synthesis. But is not the fact of an *a priori* perception itself in need of explanation? That I should know in advance of every special experience that it must be ordered in space or time or both, is surely a noteworthy circumstance. What is the ground of it? Not, certainly, that space and time are innate ideas which the percipient brings into the world ready-made, and on appropriate occasions fuses with the materials given by sense. This interpretation, by which evolutionary biologists and psychologists have found it easy to supersede Kant's 'intuitionism,' reads into the *Critique* a question which had been obsolete since Locke's answer to Descartes in the first book of the *Essay*. On the particular issue involved Kant would most certainly have sided with the empiricists. But it has absolutely nothing to do with his own doctrine of the *a priori* character of space and time. For though the designation '*a priori* perceptions' comes dangerously near 'innate ideas,' what Kant means by the thing designated is merely a function of the faculty of

sense-perception. Space and time are the universal and necessary forms in which all things are perceived: space the form of external perception; time the form primarily of internal perception, but, secondarily, since external objects are appearance to the inner sense, of external perception as well. They are *a priori* perceptions, because, and only because, they are the immanent forms or functions of the faculty of perception. All objects of sense must be perceived according to these forms of sensuous perception. What is true of these forms must hold of the objects perceived in them. Geometry is the science of the laws of space. But space is the form of external phenomena. Therefore, geometry is true of things, and not merely of ideas. The objective validity of the science rests, first, upon the fact that space is the form of all external perception (for what is true of space must then hold of the objects which space makes possible); and, secondly, upon the further fact that the objects whose relations geometry demonstrates are not things as they are in themselves, but appearances due to our (spatial) mode of sensuous representation.

Here, then, is an explanation not merely of the apodictic synthesis, but also of the objective validity of mathematical judgments. When it is proved that the three angles of a triangle taken together are equal to two right angles, the demonstration does not rest upon analysis, for the notion of these angles does not imply the notion of two right angles, which cannot therefore be analytically extracted from it. The proposition is synthetic. But the ground of every synthesis is perception. And as this proposition is universal and necessary, and prior to empirical perception, its ground must be an *a priori* perception. But an *a priori* perception is possible, only if it contains nothing but the form of the sensibility which precedes in use all real impressions received from objects. As space then, which has been proved an *a priori* perception, must be such an immanent form of perceiving, it is manifest that all objects of sense must be perceived as spatial. "Hence it follows that propositions which concern the form of sensuous perception only, are possible and valid for the objects of the senses, as also conversely, that per-

ceptions which are possible *a priori* can never concern any other things than objects of our senses."[1] Geometry is necessarily valid of the phenomenal world, because it is the science of the universal form of that world.

Phenomenalism, then, is demanded by Kant's explanation of mathematics. Geometry can have real validity only on condition that the objects to which it refers are sense-appearances of ours, not things in themselves. If objects are only our sense-presentations, it is easy to see that the forms of sense, and the mathematical sciences which specify them, have validity for the entire universe of such objects. But not beyond it in any case; and for it only as a phenomenon or appearance of ours. Nay, if the objective world we perceive were a system of things in themselves, all that is peculiar to mathematical knowledge would vanish. How could we then know anything about things before acquaintance with, or presentation of them? If for our knowledge of the relations of space and time, we had to wait for impressions from spatial and temporal things, how could we possibly be certain that future experiences would confirm the present deliverances of the mathematical sciences? But both the apodicity of geometry, and its anticipation of experience, are accounted for when space is regarded as a universal immanent function of the faculty of perception, in which, therefore, all objects of sense must be received, and of which the internal relations may be determined prior to the reception of any particular object. As the *a priori* character of geometry requires us to interpret space as nothing more than the formal condition of our sensibility, and this requirement was justified by an analysis of space itself, so for the objective validity of geometry it is required that the objects to which it refers shall be phenomena only, that is, not things as they are in themselves, but appearances to us under the universal forms of our sensibility. Can this requirement also be satisfied?

Not only for the sake of the validity of geometry *can* objects be regarded as phenomena; they *must* be so regarded if the analysis of space and time was not erroneous. For the phenom-

[1] *Prolegomena*, § 9 [IV, 31 (44)].

enalism of the objective world is the necessary corollary of the *a priori* character of space and time. As forms of our sensibility, they are conditions of appearances to us, but are not conditions of the possibility of things themselves. Other thinking beings may have other conditions of perception; but neither will these bring them to the essence of things. What things may be in themselves can never possibly be known to us by even the most luminous cognition of their appearance to sense, which alone is what is given to us. Take away the subjective constitution of our sensibility, and all the qualities and all the relations of objects in space and time—nay space and time themselves—would vanish; for all of these are, as mere appearances to sense, incapable of existing in themselves, but only in us. How it may be with things themselves, apart from our receptivity of sense, we know not. We know only what appears to us under the forms of our sensibility.

Kant's revolutionary thought is, *dass wir nämlich von den Dingen nur das a priori erkennen was wir selbst in sie legen*, that we know *a priori* of things only what we ourselves put into them. Geometry as a science of *a priori* cognitions is possible because we put space into objects. It has real validity for the world, because we *form* (not create) the world. But this phenomenal world of our forming may have other *a priori* elements than space. If so, these also will be required for the *complete* explanation of the objective validity of mathematics. Now when we come to treat of the second kind or source of knowledge, thought, we shall see that there enter into the phenomenal object *a priori* notions as well as *a priori* perceptions. And with the undue emphasis that came of piece-meal elaboration during many years, the *Analytic* tells us of mathematics, which the *Æsthetic* claims to explain completely, that its "application to experience, and therefore objective validity, nay, even the possibility of such synthetical knowledge *a priori* (the Deduction thereof), rests always on the pure understanding."[1]

Such in substance is Kant's doctrine of the *a priori* forms of sense or the *Transcendental Æsthetic*. The parallelism in his

[1] III, 153, 154 (141).

treatment of space and time, which is only a little less complete in the second edition of the *Critique* than in the first,[1] shows that for Kant the two ideas stood on precisely the same footing, though every reader must have been struck with the fact that the illustrations (when choice is possible) are all drawn from space and the science of space. For the ignoring of time there is, however, a very good reason—a reason which suggests a doubt of the value of the entire *Æsthetic*. There is no pure science of time corresponding to geometry as the science of space. And it is not easy to see, if Kant's *a priori* doctrine is correct, why one of the forms of sense perception should yield a system of apodictic truths, and the other, the more general form too, be absolutely barren. When Kant says that geometry is possible and valid, because it rests on an *a priori* perception which is the formal condition of sensibility, I find the explanation to some extent discredited by the fact that another *a priori* perceptive form is incapable of generating a science. Kant seems to have covered up this difference by treating time as one of the conditions of arithmetic and pure mechanics, at least after the first edition of the *Critique*. This view is thus presented in the *Prolegomena*: "Geometry is based upon the pure intuition of space. Arithmetic accomplishes its concept of number by the successive addition of unities in time; and pure mechanics especially cannot attain its concept of motion without employing the representation of time."[2] Whether there is a science of pure mechanics different from the application of mathematics to the phenomena of motion and equilibrium, is so doubtful an assumption that its truth cannot here be accepted as a premise for some other conclusion. And it is significant that the assumption, which is altogether absent from the *Æsthetic* in its first form, appears but once

[1] In the second edition the earlier account of space is divided into two parts—a "metaphysical exposition" (or analysis of space), and "a transcendental exposition" (or explanation of geometry by means of that analysis). The *Prolegomena* probably led him to throw the explanation of geometry into greater relief. When, however, Kant came to time, he left the earlier account unchanged as "metaphysical exposition," and then, for the sake of symmetry, added a "transcendental exposition," under which, however, he has nothing to say, but to refer to the anticipatory paragraph of the "metaphysical exposition." But that paragraph has no time-science to explain, or to parallel with space-science or geometry.

[2] § 10 [IV, 32 (45)].

in the second edition, and then not by citation of particular propositions as examples of the science, but merely under the general description of "as much synthetic cognition *a priori* as is contained in the general theory of motion."[1] It is one thing to say that the notion of motion implies time; it is a very different thing to maintain that the science of motion is based on *a priori* propositions generated from time as geometry from space. A similar criticism must be made on Kant's account of arithmetic. No doubt *we* require time to add unity to unity, but the temporal condition under which we perform the operation, has nothing more to do with the results or the validity of the operation than the muscular movements which enable us to represent it on the blackboard, or the circulation of the blood which makes them possible. The arithmetician, for that matter like the geometer, goes through processes which require time, but what he is determining is, not relations of time, but relations of number. And number is a notion *sui generis*, as little reducible to time as to space.[2] Arithmetic presupposes only the synthesis of numbers. It is perfectly indifferent whether the addition be momentary or successive. Not only therefore is there no pure science based on time (as there ought to be if time is an *a priori* perception, and an *a priori* perception is the ground of geometry), but time is not even a condition, that is, a logical condition, of arithmetic.

In fact, in spite of these later accretions, one has only to read the *Æsthetic*, even in the second edition, with ordinary attention to discover that the *a priori* propositions Kant bases on time are those neither of arithmetic nor mechanics. They are as follows: "Time has one dimension only. Different times are not simultaneous (*zugleich*), but successive (*nach einander*)."[3] These principles, it is asserted, depend on the *a priori* character of time, for experience could never have given them their absolute universality nor apodictic certainty. But even granting this impotency of experience, need we fall back on *a priori* perception? Kant

[1] III, 66.

[2] The opposite view is maintained by the eminent mathematician, W. R. Hamilton, in his lectures on Quaternions, Dublin, 1853, Preface. Wundt, *Logik*, II, 119.

[3] III, 65 (27).

argues we must, because there is no other source of synthesis. I have already maintained there is no science made up of pure synthetic judgments which can pretend to rest on time as geometry rests on space. And this contention is fortified by an examination of the specimens Kant here adduces. They are analytic propositions, "trivial" as Locke would call them. The principle that time has only one dimension,[1] when stripped of the spatial metaphor in which it is embodied, can mean only that the time of any one moment is one time, or that several times are not co-existent but successive. And this is precisely what is declared in Kant's second principle, which also finds expression in spatial imagery (*nach einander*), weakened though it is almost beyond recognition. It is the same fact which is asserted in these two different forms. The fact is the tautology that time is time. The forms, where they are not identical, differ only as the logical laws of identity and contradiction, the one implying, 'Now is now,' the other, 'Thens are not now.' But Kant himself prescribes a test which renders all argumentation unnecessary. A proposition is analytic when the predicate can be got from the subject by analysis of it. Reflect then on what is meant by time, and you will find that the predicates of Kant's two axioms are identical with the subjects, more or less complete explications of time. Thus, axioms or principles declaratory of time never get beyond the notion itself, whose existence they merely asseverate in so many different forms.

As there are then no *a priori* synthetic judgments which require as their condition that time shall be an *a priori* form of perception, we are free to examine without prepossession the direct arguments by which Kant claims to have proved this fundamental position of the *Critique*. Whether his reasoning is sound or not, one can readily appreciate the motives which impelled him to the subjectivistic point of view. For if the direction of his entire philosophy was towards the separation of those ele-

[1] In his dogmatic-rationalistic period, when everything had in some way to be demonstrated, Kant has a proof of the proposition: "The parts of time do not determine one another reciprocally; the only determinator is the antecedent. Consequently time has only one dimension." Erdmann's *Kant's Reflexionen*, II, 113 (no. 336).

ments of knowledge which depended on the constitution of the perceiving and thinking intelligence, from those which, independent of it, came from the external object, where could anything be found with less objective reality than time? Conceived as an external entity, time, again, is a creature of self-contradictions. It begets itself, and swallows itself up. In coming to the truth it dies. It is, yet it is not. For the past is gone, and the future is not here, and the present will not stay. How can you predicate objectivity of this insubstantial something which does not believe in its own reality, but flies from it like a spectre? Plato with poetic vision finely called it a moving image of eternity. Aristotle refused to see in it anything but number in motion, while number he regarded as nothing apart from the mind that numbers. And Kant finding time, "judged merely by the notion of a thing, impossible," could interpret it only as "our mode of perceiving things."[1] But Kant has additional motives for resolving time (and space too) into a subjective form of perception. The theological difficulty, which had been brought into prominence by Newton, Locke, and Berkeley, and which had formed the subject of a memorable discussion between Clarke and Leibniz, weighed heavily on Kant's mind. "If we have first of all assumed both time and space as forms of things in themselves, ... as conditions of existence as a whole, they must necessarily be conditions of the existence of God."[2] Nor is this remark, which is one of the additions to the *Æsthetic* in the second edition, merely, as has been suggested, a sop to the theologians who were outraged by the sceptical outcome and emphasis of the *Critique* at its first appearance. Kant had every reason to insist on an achievement which, not only for them, but for him also, was of the first magnitude. If his doctrine of space and time saved thought from what they all considered the monstrosity of a changing and an extended Deity—a God conditioned by space and time—it was in no spirit of accommodation merely, but with the sense of satisfaction born of victory in a great intellectual struggle that Kant mentioned the fact, and, by mention-

[1] III, 79 (S. 167).
[2] *Reflexionen*, II, 115 (No. 374).

ing it, revealed a motive which assuredly influenced him in his acceptance of the *a priori* doctrine. This is confirmed by numerous passages in the *Reflections*, of which there is here room for one only: "If space and time are regarded as conditions of the existence of the world as it is in itself, ... the divine causality with regard to the world would be determined in time, and God himself would accordingly be inseparable from the world. His causality would fall into a series of causes and effects in time, and God himself, with all else that belongs to the universe as a whole, would be contingent."[1] It is not the worth of this argument that here concerns us, but the fact that in Kant's opinion it led to a conclusion revolting to common sense and sound philosophy, which it was the unique merit of his system to have set aside.

Turning now from the motives to the logical force of Kant's reasoning, we have as his first position the following: "Time is not an empirical concept (*Begriff*) which has been abstracted from any experience (*Erfahrung*), for neither co-existence nor succession would enter into our perception (*Wahrnehmung*) if the representation (*Vorstellung*) of time were not *a priori* implied."[2]

It will be observed that the thesis here to be demonstrated is exclusively negative. Time is *not* a concept derived from experience. What it may be is left to the later proofs to determine. It is the more necessary to call attention to the fact, because, on the supposition that Kant is here proving that time is an *a priori* form of perception, we should have to follow Ueberweg and others in declaring the argument invalid. It is in fact unfortunate that even in a subordinate sentence the term *a priori* has been introduced.[3] For whether it connote "universal and necessary" or "prior to experience," it cannot as yet be predicated of time. The argument for necessity follows in the next paragraph. And the experience, which is here taken as a starting-point, must be made up of perceptions of whose temporal relations there either is or is not a consciousness. If there is such a consciousness,

[1] *Reflexionen*, II, 116 (No. 376).
[2] III, 64–5 (27).
[3] It does not occur in the parallel exposition of space.

time is already implied in, and so not derived from, experience. If there is not such a consciousness, no mental chemistry can extract it from the perceptions. But this only entitles you to say that your consciousness of time is an original element of your experience, an element underived from any other element, though not prior to all. As to the question whether time has objective reality or not, that is a question not in the least affected by this analysis, which, at bottom, means only that time is a fundamental constituent of experience, which is logically prior to every particular consciousness of succession or co-existence. The fact is that we have perceptions of co-existence and succession; and Kant's sole contention is that these imply a time consciousness, which, therefore, cannot be derived from them. This is not only true, it is a truism. But however trifling the value of Kant's analysis may be to us, it bears the historical significance of first disclosing the *petitio principii* in Leibniz's account of time as "the universal order of changes," changes being treated as something different from time.[1] Thus it is in relation to modes of philosophy now largely obsolete, resting as they do on a mythological psychology, to rationalism on the one hand, and not less to sensationalism on the other, that the full worth of Kant's first thesis is to be properly estimated.

The consciousness of time is not then to be derived from experience of succession and co-existence. But it remains to be proved that it is not derived from *any* experience. This Kant attempts in the second stage of his argumentation: Time is a necessary representation (*Vorstellung*) on which all perceptions (*Anschauungen*) depend. We cannot take away time from phenomena (*Erscheinungen*) in general, though we can well take away phenomena out of time. Time, therefore, is given *a priori*.[2]

But is it a fact that we can do away with all events and objects and leave to thought an empty time? Time without things that succeed or co-exist is a word merely. Whoever could suppress all contents of time would have brought about also the complete

[1] See Baumann's *Raum, Zeit, und Mathematik*, II, 91–95.
[2] III, 65 (27).

collapse of time itself. But in reality Kant's possibility is less feasible than his impossibility. We *can* take away time from phenomena. At least, we can, while attending to their qualities or spatial constitution, abstract from their relations to time. But we can never, while thinking of their time-relations, abstract from everything else, for it must always be a phenomenon of some kind that has time-relations to another. In a word, you may think of phenomena without thinking of time, but you cannot think of time without thinking of phenomena. Kant would, however, probably retort that, though we may, by a conscious effort, direct our attention away from time, yet anterior to such reflection, every phenomenon of our experience has fallen into a definite point of time, which on that account must be regarded as a "necessary representation on which all perceptions depend." But whence this 'necessary'? You know simply that as a matter of fact time is a mode of perception which accompanies all our presentations, internal as well as external. You are not thence entitled to assert it *must* do so. From the fact that it *does* do so, we may conclude that it is not a mere accidental constituent of perception, which might at one time be present and at another absent. It is a constant element in experience. We do not know that it is necessary. We are sure it cannot be evacuated of phenomena and yet remain an entity by itself. Accordingly, the grounds on which Kant rested its *a priori* character have fallen completely away. All that remains is this fact of observation, that the time-consciousness is the most general element in our experience, attaching as it does to internal states and to external objects. But, in a theory of knowledge, that does not entitle time to any other prerogative over its allies. Kant rent in twain the seamless garment of experience, and, finding both warp and woof in the texture, fell upon the curious idea that the one was contingent and the other necessary, necessary even to the maintenance of its partner. For on what other ground is it claimed that time "is given *a priori*," that "in time alone is reality of phenomena possible," and that though "all phenomena may vanish, time itself (as the general condition of their possibility) cannot be done away with?"[1]

[1] III, 65 (27).

The source of Kant's confusion is his absolute distinction between 'form' and 'matter.' Time (and the same holds of space) is the form of phenomena; what corresponds to sensation is their matter. "And as that in which sensations are arranged and placed in certain forms cannot itself be sensation, it follows that, though the matter of all phenomena is given us *a posteriori*, the form of them must lie ready in the mind *a priori*, and must therefore be capable of being considered as separate from all sensations."[1] There would be force in this argument if, while we felt or perceived the contents of objects, we did not feel or perceive their relations. Or, expressed in the most sensationalist phraseology, the co-existence and succession of feelings make as distinct impressions upon consciousness as the feelings themselves. It is true that our knowledge of such relations is more than mere passive affection, but precisely the same remark holds with regard to our knowledge of the feelings. So that here again, as more than once before, we have been forced to the conclusion that, when Kant's arbitrary walls of partition are broken down, what he calls *a priori* has nothing to distinguish it from what is *a posteriori*.

In the first proof Kant aimed to show the priority of the time-consciousness to every perception of temporal relations, and in the second its absolute indispensableness to experience of every kind. He has still to determine which 'stem' of knowledge it belongs to, sense or understanding. And the remainder of his argumentation (including the time-axioms we have already examined) is to the effect that time is a pure perception.

"Time is not a discursive, or what is called a general concept, but a pure (form of sensuous)[2] perception. Different parts are parts only of one and the same time, and the representation which can be produced by a single object only is called a perception. . . . . Every definite quantity of time is possible only by limitations of one time which forms the foundation of all times.

[1] III, 56 (18, S. 139).

[2] The three words I have enclosed are not found in the parallel proof for space, and are ignored in the proof that follows them here. Did Kant find it more plausible to say space was a pure perception than to say time was?

Therefore, the whole representation of time cannot be given by concepts (for in that case the partial representations come first), but it must be founded on immediate perception." [1]

A single representation (*Vorstellung*) in consciousness, produced by a single object, is called a percept. Does that entitle you to describe time as a percept, even assuming it a single representation? The derivation from an external source, which is a characteristic of ordinary percepts, fails altogether in Kant's account of time. There is left, then, the claim (1) that it is single, and (2) that it is the antecedent substratum in which all particular times are determined. Can time, then, on these grounds, be declared a pure perception?

That time is an empty form in which particular times are determined, is a proposition that cannot even be realized in thought without the aid of that spatial coloring in virtue of which Kant deemed himself justified in transferring to time all the arguments he had already established with regard to space. Cease to think of time as a straight line extending infinitely in two opposite directions, and what background is there for marking off particular times on? In Kant's contention, as so often happens, the thinker is the slave of his own abstractions. The real *prius* on the subjective side is a unity of self-consciousness in the series of its affections. The idea of succession, however, is more than a succession of ideas. It could not originate without memory. It implies the union of different and separate ideas, as well as the consciousness of their separation, for both of which reproduction is necessary. For its development there is also required the presence of interrupted ideas, ideas markedly different or suddenly arising. Originally time is a discrete picture, light points over a field of darkness. Only when reflection shows that the same intervals might have been filled by different ideational processes, differently divided, do we reach the conception of a continuous flow of time which we forthwith represent and hypostatize as a straight line. This notion, like other notions, has no real object correspondent to it. It is the generic form of all the specific temporal relations of events. But it differs from other notions in

[1] III, 65-6 (29-30, S. 148-9).

this, that, though one of the most general, it is at the same time markedly concrete. Kant named it on this account a perception. It is really a conception which refers immediately to perceptions. Its singleness, its want of divers characteristics, must be conceded to Kant; but an abstraction need not be individualized or turned into a perception because its content is unitary. Most notions, it is true, have several marks (man, *e.g.*, including rationality, configuration, etc.), but plurality of characteristics is not essential, as will be seen by considering notions like matter, force, and being. And wherever a term connotes but one attribute, it may be said that all the individuals designated by that term are included *in* the abstraction rather than *under* it. All particular beings may thus be described as determinations in the one being, just as Kant, *mutatis mutandis*, describes times and spaces. This peculiarity of the notion of time, on which Kant lays such stress, is due, therefore, altogether to the simplicity of its content, which, however, is not without parallel in other universally accepted notions. Nor is the perceptive character of time an inference from our postulate of its infinitude. It lies in the nature of the notion of time that we should go from one idea to another without absolute cessation. Every idea, every relation of ideas, carries with it the impress of time. And as abstract time is represented by a straight line, it readily takes on the characteristic of infinite addibility, which primarily belongs to quantity.

The arguments by which Kant sought to prove that time is a necessary *a priori* perception have one and all shown themselves inadequate. With this undermining of his premises must fall also the conclusions founded upon them. Nevertheless, from their importance to the Kantian system, and their significance for all subsequent philosophy, these conclusions deserve a separate consideration.

Let us then begin with assuming that the Kantian exposition of time (which we have demonstrated erroneous) is actually correct. The next question, as the *Prolegomena* and *Reflexionen* happily bring out, is, How are *a priori* perceptions possible?[1] Since they are not empirical, there is nothing else they can repre-

[1] *Prolegomena*, §9 [IV, 31 (44)]; *Kant's Reflexionen*, II, 121–2 (no. 395).

sent but the subjective conditions under which the object is perceived. If space and time are *a priori* perceptions, they must be mere representations of the forms in which the senses perceive objects. They must be forms of sensuous perception. In the letter to Herz, dated February 21, 1772, we have the first designation of time as the "form of the inner sense."[1] Elsewhere Kant offers a proof of this settlement of the problem, which implies a point of view altogether foreign to the argument of the *Æsthetic*, though it seems to be Kant's ultimate position on the subject. "That time is the form of the inner sense," he writes in the *Reflexionen*, "is clear from this, that though we may think of it (*in Gedanken haben*), we can never perceive (*anschauen*) it as something external."[2] And the second part of the *Critique* not only everywhere implies this view of space and time, but explicitly declares "they cannot in themselves be perceived."[3] How then can they be *perceptions?* And what can the *Æsthetic* possibly mean? Kant relieves us by an arbitrary definition, which seems to make his argumentation superfluous. "There is no absolute space or time. Pure perception signifies here, not something which is perceived, but the pure formal condition which precedes the phenomenon."[4] This is taken to imply that space and time must be subjective only.[5] The question, How are *a priori* perceptions possible? is answered by the definition of them as formal, purely subjective conditions of perceiving. It need scarcely, therefore, have been asked.

However Kant effects the transition from *a priori* perceptions to formal conditions of perceiving, it is on this latter interpretation of space and time that the phenomenalism (or, as it might also be called, the agnosticism) of the critical philosophy is founded. "Time," Kant maintains, "is *nothing but* the form of internal sense, that is, of the perceiving of ourselves and our inner states."[6] It has nothing to do with things themselves. Not till they come before the mind as presentations do they catch a reflection of the subjective image of time, which in this way

[1] VIII, 693.
[2] II, 118 (no. 384).
[3] III, 159 (S. 273).
[4] *Reflexionen*, II, 126 (no. 413).
[5] II, 123 (no. 402).
[6] III, 67 (29).

may be called the formal condition of external as well as of internal phenomena. But time is not a thing by itself, nor a determination of a thing by itself. It is "nothing but the subjective condition" of perceiving. And, like colored spectacles, it turns the object of our knowledge into appearance to us. We never, therefore, can know things as they are in themselves. Yet so far as mere appearances to us must be in time, the subjective form has an objective significance. Though it is no part of real objects, we put it into phenomenal objects, which are all that we can ever know. As the *form of our perceiving*, time can have no outside counterpart. But the matter it moulds into phenomena must come from without, though the form in which we receive it hides from us the nature of things in themselves. Even ourselves we cannot perceive as we are, but only as we appear to ourselves through the form of the inner sense, that is, through time. Space is the form in which we perceive external objects, time the form in which we perceive ourselves and everything else too.

Hold the Kantian dogmas of the opposition of form and matter in perception, and make space and time mere perceptive forms, and you cannot escape Kant's phenomenalistic result.

Yet it is a result that can satisfy no one. Kant protested against confusion of his ideality of space and time with the "mystical and visionary idealism of Berkeley." But Berkeley's position is rigorously logical and consistent. Holding the objects of perception to be our own ideas, he denied the independent existence of material things. But, as the aggregations of ideas we call objects appear, disappear, and reappear, without our own volition, we must seek their cause in a will which, from the plenitude of its effects, cannot be deemed less than infinite. All this is clear and well concatenated. But Kant's doctrine "concerns not the existence of things, since," he says, "it never came into my head to doubt them."[1] It is the things that reveal themselves in appearances to us. They are the causes or grounds of the given 'matter' of our phenomena, of which space and time are the mind-made forms. Accordingly, you cannot enter the critical

[1] *Prolegomena*, § 13 [IV, 42 (61)].

philosophy without things in themselves. Neither, however, can you stay there with them; for Kant afterwards restricted causation (free will apart) to phenomena. Thus freed from their real grounds, appearances have nothing to distinguish them from illusions. This result, though contrary to Kant's intention, is an inevitable consequence of his thought. In spite of his energetic protest, it is his own logic that turns the *Erscheinung* into *Schein*.

And the things in themselves? They stand in a timeless background stripped of all the vestments and trappings of space. What their rights to spatial investiture may be, must be considered when we come to treat of Kant's doctrine of space. Here, where we are dealing with time only, what demands attention is the conception of a timeless universe. Idealistic theories of perception had not infrequently resolved solid and extended bodies into mere subjective perceptions. But though the material world might be an insubstantial pageant in the fancy of man, it had seldom occurred to phenomenalists before Kant to treat the temporal flow of our ideas as a merely human form of perceiving, and no real determination belonging to the ideational current itself. Neither within us, nor without us, according to Kant, is reality characterized by time. But a world in which there is no time, is a world in which nothing happens. From the reality of change, Mendelssohn and Lambert argued, in reply to Kant, to the reality of time. Kant's rejoinder[1] does not touch the nerve of the argument. It ignores the fact that without experience of change there is no consciousness of time. He hides from himself the difficulties to which his theory gives rise, by persistently refusing to follow up the metaphysical problems he starts. For the rest he cherishes such a view of the real world as his moral consciousness demands. And if that removes it from change (as it is removed in ethics by the doctrine of intelligible character), he sees no incompatibility in making the phenomenal world the theatre of perpetual unrest. Nothing in reality is ever changed; things only appear to us as changing. Thus, by a magic stroke, the contrary currents of philosophy are brought together. Parmenides's doctrine of changeless Being, and Her-

[1] III, 69 (S. 153).

acleitos's doctrine of ceaseless Becoming, find their truth (as Hegel would say) in Kant's doctrine of the ideality of time!

But it is only in words. The difficulties of a real coalescence from Kant's standpoint are insuperable. And we must return to the starting-point. Kant has proved nothing but the truism that time is a mode of perceiving. So is color. But both alike have conditions in the real world. They are not like their conditions, as Locke clearly showed of color, but they are the counterparts of them. Neither can be described as "nothing but" a subjective mode of perception. That dogma falls with the insight that Kant's opposition of 'form' and 'matter' is altogether untenable. The mind produces everything that enters into the perception of an object, but it is also conditioned from without. Moreover, if we ask what qualities must belong to things themselves, if they are to awaken us to the idea of a continuous flow of time, the answer is that there must be a constancy in their presentations to us. Suppose a universe in which there was nothing abiding, then the objective foundation of our idea of time would be gone. On the other hand, a universe in which nothing was changeable would equally fail as objective ground of the idea. What is needed is a constancy of change. And this includes constant abiding objects of consciousness and constant laws of change; the one as fixed points for the combination of separate ideas, the other as suggestive of something more than subjective reproduction—of an actual objective ground.

For the crude philosophy of naïve reflection, time is purely objective. For the so-called critical philosophy of Kant, it was purely subjective. For the scientific philosophy of to-day, it is a mode of perceiving (subjective), which has its conditions in the real world (objective). There would be no ideas of time without a consciousness capable of forming them, as ours is in virtue of its own unity and its attribute of memory. But neither would there be ideas of time, unless to this subjective condition there was added the objective condition of constancy amid change in the real world. Kant rightly saw that time was subjective. His inference that we can know nothing about the real world rests not on that subjectivity, but on the treatment of time as a uni-

versal form, furnished by the mind alone, for the reception of matter given from without. Considered as a subjective possession, apart from the doctrine of form and matter, time really warrants certain inferences regarding the external world as objective ground of its own origination.

Kant set out to prove that time was a necessary *a priori* perception. His arguments have been shown untenable. With them falls the inference, based on the doctrine of *a priori* perceptive forms, that knowledge never reaches reality, but, being intercepted by its own forms, is restricted to sense-appearances. This subjectivistic conclusion, whose premises had been thus destroyed, we have also examined on its own account. Its metaphysical implication is a real universe of changeless existence, like the Being of the Eleatics. That *we* should be making all the noise and stir in a world of eternal rest and silence is, however, incredible. Change must be real. Without it there would be no perception of time, much less of that *a priori* perception by the aid of which Kant despoils change of its reality. So that subjective phenomenalism can neither rest on the support Kant provided for it, nor has it vitality enough to stand on its own legs. Furthermore, an alternative account of time has been outlined, in which none of these objectionable consequences are involved. All that is left of Kant's doctrine of time and of his inferences from it, is that subjective time is not identical with objective time.

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SOME DETERMINISTIC IMPLICATIONS OF THE PSYCHOLOGY OF ATTENTION.[1]

I.

The Psychology of Attention.

NOW that some of our foremost metaphysical psychologists have defined the effort of the will to be an effort of attention, the only true way to approach the problem of 'freedom' seems to be by a study of the attention process and its implications.

We must accept first the statement that attention is coextensive with consciousness. Stated positively, this means that every conscious state is in some degree attended to. Stated negatively, it means that attention is impossible until the object of attention is present in consciousness.

The object of attention may enter consciousness in two ways: it may come from without through sensory excitation, or from within through representation in some associated train of thought. No other methods of entrance are possible. In the absence of any superior authority, it is evident that our attention-objects are selected for us; in the field of sensorial presentation by 'chance;' in the field of representation by the law of association operating upon prior sense experience.

Once within consciousness, every attention-object tends to be unfolded or to unfold itself—spontaneously through intrinsic reasons, voluntarily through extrinsic reasons. In the primary sense experience, we attend because the object has an interest for us, because it excites either an agreeable, or a disagreeable, or a mixed psychic state. To strike deeper, it has an interest for us because of its harmony or discord with preformed and present-existing tendencies, and the hedonic tone of the experience, its agreeable or disagreeable quality, is but the surface indication of the deeper lying relation.

[1] Abstract of a Thesis presented at William's College for the Master's Degree.

In the first analysis of voluntary attention, motives are the substitutes for feelings as initiators—the attention-object is a means to an end. Ribot has traced the growth of the power of attention through four psychic life periods.[1] The infant is capable only of spontaneous attention, determined by the object's power of attraction. In the second period, the educator employs only simple feelings, fear, hope of reward, and curiosity, which seems to be the appetite of intelligence. In the third, artificial attention is aroused by secondary feelings, ambition, emulation, duty. The fourth period is one of organization; attention is aroused and sustained by habit. The mere fact of being placed in a certain attitude, amidst certain surroundings, brings with it all the rest; present interests yield to an accumulation of prior interests. Then eliminating the 'educator,' Ribot's formula reads as follows: "Voluntary attention originated under the pressure of necessity, and of the education imparted by things external."[2] Whether the savage worked that he might not starve, or made a present to his chief to secure his favor, whenever means which had no interest were first made to minister to an interesting end, there voluntary attention first appeared—all before that was spontaneous. The conclusions of Ribot and Stout[3] on this point are here accepted without comment; voluntary attention is a later growth derived from the spontaneous form.

In every case of attention, the object forms the nucleus for its psychic fringe, a center to which thought again and again reverts. Left to itself, through association and discriminative sensory accommodation, it gains distinctness, breadth, and dynamic efficiency, and this process of expansion continues until its end is attained (until it issues in action or its interest is exhausted), or fatigue destroys its efficacy. It may cease also by the occurrence of some competing impression, the rise into consciousness of some new attention-object attractive enough to drive the old from the field. In voluntary attention, the object is not left to itself. We direct its course hither and thither. By the process of selec-

[1] *The Psychology of Attention*, pp. 39, 40.
[2] *Ibid.*, p. 43.
[3] *Analytical Psychology*, Vol. II, 97–103.

tive attention, we retain certain parts of the psychic fringe as they appear, and reject others. We are masters of the expansion process even to destroying it. If the word voluntary means anything, it means this.

The question of causality has greatly confused the deterministic controversy. It involves all the polemics of materialism and idealism. If we accept the Kantian conception of uniformity of antecedence and consequence in time, we may say that attention is the cause of movement. There are two parts in any volition—first, a psychic state which may be expressed by the words 'I will.' This has no efficiency whatever—we may form a resolution and never carry it out. There is also a physiological process of which the psychic state is the mere accompaniment. Nervous energy, a physical force, is the motion-producing factor. The change from afferent nervous impulse to consciousness, and from thought to efferent impulse, are ultimates which neither physiology nor psychology have yet explained. It is an irreducible psycho-physiological complex. We have a stimulation of brain-cells by brain-cells, and the rise into consciousness of corresponding psychic states which invariably accompany the excitation of brain cells and groups of cells. "Thought," says Setchenoff, "is reflex action in its two first thirds." Motion alone is absent. The nervous energy, which in a reflex issues in action, is expended internally to arouse another group of cortical cells, and we have an associated train of thought. The materialist will maintain that psychic states arise because of brain process. The idealist, with equal ardor, claims that brain processes are initiated and controlled by an ego of psychic states. The determinist gives up the idea of forceful causality, and, accepting the Kantian conception, sees only concomitance, and is content.

Attention, through apperception, is the process by which the mind grows. Character may be defined as the sum total of present and past apperceptive groups. According to Professor Stout, "a mental group or system is a grouped or systematized tendency," and "apperception is the process by which a mental system appropriates a new element or otherwise receives a new determination."[1] It presupposes, then, a mental group in stable

[1] *Analytical Psychology*, Vol. II, pp. 112, 114.

equilibrium. As a second factor, there must be attention to some novel and disturbing element. Thirdly, it presupposes a tendency to adaptation, a readjustment to stable equilibrium. Every time a mental group enters into action, it is modified—it acquires new components or discards new or old elements, it becomes more or less excitable than before. If character depends on apperceptive systems, their presence or absence, and their relative strength, attention is the process through which these systems are formed and modified. If the new attention-object is in harmony with a preformed tendency, it is adopted and the mental group becomes more comprehensive. If antagonistic, the new factor must form the nucleus for a totally new mental group. The work accomplished is a classification of experience, and all experience is subjected to it. The infant reaches out its hand to the flame because of its instinctive desire for bright objects. The burn it receives initiates a new discrimination between bright objects that are painful, and those that are not. If the readjustment is accomplished by noetic synthesis of the new with the old, we have positive apperception. If the attempted synthesis is defeated, we have negative apperception, which is equally a readjustment in that the new factor is excluded, as when we say, 'The daisy is not fragrant.'

Here we may define conflict as "a state of more or less prolonged suspense between positive and negative apperception."[1] Will, then, as a conscious psychic state is either an affirmation or a denial of the relation between a new experience element and an established mental system. This, however, is only the psychic term in the psycho-physiological complex. The will finds no occasion for exercise except through conflict. Voluntary attention is selective attention. The Kaffir cannot say, 'I will attend to a monocle,' until through spontaneous attention he experiences what a monocle is.

The relative strength of competing apperceptive systems is determined in certain known factors which Stout has tabulated:[2] coöperation, organic influence, closeness and complexity of or-

[1] Stout, *Analytical Psychology*, Vol. II, p. 145.
[2] *Ibid.*, Vol. II, pp. 131–137.

ganization, comprehensiveness, strength of coherence, are but a few of the elements governing conflict. When any mental system is excited, the entire group does not enter consciousness, but remains to a large extent beneath the threshold, certain parts emerging as they are required under the control of noetic synthesis. The subconscious components are equally influential with the emergent, and this is evidently the meaning of action determined by character. The man whose apperceptive totality is self-centered is generally unconscious of his selfishness. He cannot realize that the beggar's appeal is negatively rather than positively apperceived, because his tendency is so unassailable that its equilibrium is only lightly shaken. If he indulges in introspection, he sees only the play of motives, temporary and fleeting, and the stable mental group, because it is below the threshold, escapes attention.

Attention as a conative process consists in expansion and definition. Its result is prominence in consciousness of one object to the exclusion of others. The striving is not for entrance. We cannot by direct effort bring any object above the threshold. We may feel a void or absence and a conscious purpose to fill that void, but the various steps in the process of satisfaction are outside of our control. We expect and invite all objects which minister to a given purpose, without prescience of them. Their own inherent strength and the law of association determine what objects shall respond to the invitation. The mechanism of attention is motory. Every perception, image, and idea contains the germs of its own development. To inhibit or intensify, attention must act through motory readjustment. It may be only vaso-motor in the cortex of the brain, it may be through change in the respiration or in the muscular system, especially in facial expression. These physical phenomena are neither causes nor effects, but accompaniments, integral parts of the psycho-physiological complex. We may have motory adjustment without attention, but no attention without motory adjustment. A more complete defence of this thesis will be found in Ribot's *Psychology of Attention*,[1] and confirmatory evidence

[1] pp. 52–59.

in the researches of Ferrier and Starr, and in the pathological cases investigated by M. Guge, of Amsterdam. Stout, while holding that attention is a purely psychical fact,[1] "the direction of thought to an object," [2] and that motor accommodations are not an integral part of the attention process, but merely a means of sustaining and promoting it, is forced to admit that "the function they discharge is not merely important, but actually indispensable." It is an open question whether a function indispensable to a process is not an integral part of that process.

I venture to repeat here that *what* our attention-objects shall be is determined for us by spontaneous attention, and later by the law of association. We may select only *which* among these shall expand themselves in consciousness. We mean then by fixation of attention, not how to introduce an object, for attention is impossible until its object is above the threshold, but we mean rather how to develop it and maintain it against opposing attention-objects after its emergence.

It is equally true—even axiomatic—that we can cease to attend to a certain object only by attending to something else. Consciousness is continuous. This is equivalent to saying that remission of attention is possible only indirectly—by transference of attention to some antagonistic object. Then comes the question: Is the one object rendered prominent by suppressing others, or are the others suppressed by the exclusive nature of the one? The positive effort of attention to one object can never be identical with an effort to inhibit other objects, nor can it depend on such negative effort, for the attention-object is at once changed to an idea, the idea of inhibiting the other objects. This is equally true in muscular movements. The effort to move the arm in one direction is never identical with the effort to keep it from moving in all other directions. When in anger, we drop the arm by the side, this movement from its very nature prevents the blow we were about to strike. The inhibition of attention from one object is accomplished only by attending to another object. The law admits of no exceptions. Every object of attention tends of itself

[1] *Analytical Psychology*, Vol. I, § 7, pp. 203, 204.
[2] *Ibid.*, Vol. I, p. 209.

to expand and develop, opposing objects being absent. It needs no acceleration, and we can direct or annihilate its inherent motion only by attending to certain selected relations, or to totally new objects.

The distinction should be emphasized between 'attention as the direction of consciousness *to* an end,' and 'attention as the direction of consciousness *for* an end.' The end for which is a purpose; the end to which a presentation or representation. In solving a riddle, the purpose is coexistent with its positing. The form of the conundrum suggests certain answers whose character depends on previous experience. Attention cannot be directed to them until they appear in consciousness through some association. Then we attend to them as ends until, through selection, they are accepted or rejected as meeting given conditions. The ends to which may be many; the end for which is one. The end for which may be expressed as a verb—to solve; the end to which as a noun—solution.

But if attention is not the direction of mental activity to an end, what is it? The arousal of mental activity for an end. The object appears and expands not because we direct attention to it; it antedates and solicits attention *for a given purpose.* Here we differ from Stout.

Attention in the last analysis is the mental attitude of receptivity. Fixation of attention is the process of motor or vasomotor adjustment by which the receptivity is accompanied, and the feeling of effort is the 'reverberation in consciousness' of this adjustment. Attention is a permissive state. It allows the object to expand by the law of association or discriminative perception. It can inhibit the expansion only through the readjustment of consciousness and of motor processes, so that they become more receptive to an associated or new attention-object. Receptivity to one object renders consciousness less receptive to all others. The permanence of the receptive attitude for a given object depends on its strength of interest for us, which we have defined as its harmonious or discordant relation to an established apperceptive system. This receptive state is constituted psychically by the determination to attend. Establish an end for which we strive, and

the mind instantly becomes receptive to all impressions or representations which may minister to that end, and among these in the degree of such ministration and of their interest. Physiologically, the act of will is accompanied by increased activity in the corresponding brain cell, or group of cells, which renders more susceptible to excitation those cortical cells related to it in the same manner that all possible attention objects are related to the end for which. The motory adjustment, which, reverberating in consciousness, produces the feeling of effort, follows on the excitation of the main brain cell corresponding to the volition to attend. We agree with Bradley, that this feeling of effort is illusory in that it is ineffective. It is a psychic fact accompanying motor change. In attention to images and ideas, it may be nothing more than a dim awareness of vaso-motor adjustments. In trying to recall a forgotten name, we establish the 'end for which,' and 'the idea of end both prompts and selects the means which satisfy it.' Of its own motion it introduces into consciousness in turn every experience we have ever had of the person whose name we seek to recall. We may be forced to give up the attempt and attend to some foreign attention object, and after a few minutes the name suddenly rises above the threshold. This added phenomenon seems to prove two things. First, that when the process of expansion, is once initiated by the establishment of the purpose, its further development is inherent in itself, even when not consciously attended to, *i. e.*, when consciousness has become receptive in another direction. Secondly, we can account for the final emergence above the threshold, not by any direction by the ego of attention to the forgotten name, for all conscious activity in that direction has ceased, but rather by the supposition that the receptivity to such representations, because of its recency, is extremely susceptible to reinstation.

We are now able definitely to delimit the sphere of will. In spontaneous attention will is absent. The object attracts us in the measure of its interest for us, and its interest compels our receptivity. We remain receptive until through satiety or fatigue, or the rise of another object of preponderant interest, the interest of the first object and our receptivity vanish together.

Voluntary attention is divisible into two forms. The first is teleological merely. It is consciously for an end, and for an end established by the individual, and therein it differs from spontaneous attention. It involves the same relation of interest and receptivity, but the will is absent if our former statement is true, that the will finds occasion for exercise only through conflict. In the first kind of voluntary attention, we attend for an end unimpeded, there are no conflicting objects soliciting attention. In the second kind, we attend for a purpose, but we attend to one object rather than to another, and will presupposes a motive for this discrimination. This motive or 'end for which' may be extrinsic or intrinsic, conscious or unconscious, but it is the first step in the volition process—without it we cannot become voluntarily more receptive in one direction than in another. The 'I will' represents, without producing it or being produced by it, the fact that we are receptive. Interest again constitutes receptivity for one object in preference to others, but it is here accompanied by a third concomitant psychic fact, an 'I will' which, because it is the only conscious psychic fact, seems to be a direct agent, and the only agent. Therefore, it has been said: "Voluntary attention is subject to the superior authority of the ego. I give or withdraw it as I please; by alternate turns I direct it toward different points. I concentrate it upon each point as long as my will can sustain its effort."[1] Therefore, attention has been so long regarded as a power or faculty of the mind by the older psychologists. It is in one aspect a mental attitude, in another a physical process. Broadly considered it is a psycho-physiological complex.

The pathology of attention considered in this light, is instructive. At one extreme we have 'hypertrophy' of attention (adopting Ribot's nomenclature), of which the fixed idea is a type. The state of receptivity, once formed, tends to become permanent, and the attention-object cannot be displaced from consciousness. It is exaggerated spontaneous attention. If our analysis of attention has been of any value, it shows that objects expand and maintain themselves in consciousness, of their own motion. The origin of 'hypertrophy' is in diseased interest or diseased apperceptive

[1] Quoted by Ribot, p. 41.

tion, rather than in diseased will. At the other extreme is 'atrophy' of attention; apathy and hysterics. The mechanism of association becomes tyrannical and acts without selection. It is a reduction of interest in all objects to a common level; there is no selection, no receptivity for one rather than another object, because no object is more interesting or uninteresting than others. Will is inoperative because interest is inoperative.

II.

DETERMINISTIC IMPLICATIONS.

The dictum that effort of the will is coincident with effort of attention, needs some explanation. The subject matter of volition, on which it operates is conceived to be always and only attention-objects. We will the realization of some idea. The 'I will' is without the least efficacy in the physical world. We determine for some purpose to attend to a certain object. The attention process once initiated, there is a state of suspense between positive and negative apperception which we call deliberation. One object at length becomes positively apperceived, and its alternative thereby negatively apperceived, and this we call choice. Whether that object shall finally realize itself in the external world as movement, depends not on the will which initiates the attention process, but on a habit or tendency, closely akin to what we call obstinacy or firmness of will. 'Steadfastness' is the real synonym for will power in common usage. 'Strong-willed' means of undeviating purpose, and a weak-willed individual is one who, making resolves, is easily influenced to change or forget them. Strength of will depends on permanence of interest and its exclusiveness. Weakness of will is due to instability of interest.

The effort of attention as a psychic fact we have declared to be the reverberation in consciousness of peripheral, or perhaps vaso-motor, adjustments which accompany the formation of the receptive attitude. When Professor James declares the problem of free will to be "whether we could have given more effort of

attention to one alternative,"[1] this is equivalent to asking, whether the motory adjustment could have been made more intense, and could have been better adapted to the attention object. It involves the assumption that physical adjustment is the forceful cause of attention, and that the will operates directly on physical elements in adjusting them. The determinist in the first place denies all efficacy to the feeling of effort. The word 'reverberation' implies that the effort antedates the consciousness of it. Peripheral adjustment is neither the cause nor the effect of will, or of the attention process. It is a concomitant physical fact of equal importance in the process with the psychic fact of receptivity. The two are inseparable. There is no effort of the will which could influence selective attention, and so make for freedom. Were there such effort, its action would be necessarily psychical and exerted to reform and readjust perceptive systems so that, by this effort, the interesting should be made uninteresting and the uninteresting, interesting. In other words, the problem for the determinist reads, not whether there can be more effort given, for there is no efficacious effort, but *why* we attend to one object rather than to its alternative. Professor James's statement of the problem is based on the assumption that we do "act in the line of greater resistance," and his postulate of effort is consequently an essential. If we do so act, an attention-object weak at the outset of the process, may be rendered stronger than its opponent at the close, and this by direct effort. If that effort were all we were capable of, and yet it failed and the weak remained weak, the action would be determined. If we could have given more effort, but did not, then our wills are free. There are two vantage points here for the determinist. He may claim that determination consists in a limitation of the capacity for effort, or that, even granting a man does put forth effort, the object of two alternatives upon which the effort is bestowed, may be determined.

The one point I have striven to enforce in Part I has a most obvious application here when we ask Professor James how action in the line of greater resistance is accomplished—how by direct effort the weak attention-object may be made strong. We must deny

[1] *Psychology*, p. 571.

once more that the ego (granting that there is a soul-entity) can bring into consciousness by direct effort an object which is absent, or can bring above the threshold any part of an object's psychic fringe which lies below that threshold. We cannot become conscious of any object or sub-object until it appears through association or presentation. The phrase "action in the line of greater resistance" loses sight of that valid distinction between the strength of a tendency to produce action, and its prominence in consciousness. All our measurements of strength and resistance are presumptuous. Professor James admits this, when he says that the question of 'freedom' will never be settled on psychological grounds because the amount of effort is an unmeasurable quantity.[1] We may choose the painful instead of the pleasant, the evil instead of the good, the harmful instead of the salutary, but interest is something apart from algedonics, and action is the only criterion, the only test of the strength or weakness of our interest.

The deterministic statement of the problem is as follows: In spontaneous attention, our receptivity is admittedly determined by interest. When for any purpose we attend to an object which has no competitors soliciting us, our receptivity is again determined by interest. When for some purpose we attend to alternate objects, each solicits, each by its peculiar interest tends to render consciousness receptive exclusively to itself. The final outcome of the conflict is determined by their relative interest, unless the ego interferes by an act of will to destroy the interest of the one, or to increase the interest of the other. Granting that the will does so interfere, is its interference arbitrary, or should we be able to assign some reason or motive for its interference? If unmotived, we have determination by nothing. If motived, then interest appears again. We may conceive will to interfere with this interest in turn, and the only result is an infinite recessional chain of which interest or chance is the ultimate link.

To consider will as a faculty is to render the dilemma unavoidable. The postulate of freedom depends for its very existence on there being such a faculty. To the determinist, will is

[1] *Psychology*, Vol. II, pp. 572 ff.

as much a mere mental attitude as is attention, and freedom is consequently an irrelevant absurdity. If we mean by attention the mental attitude of receptivity, will is its first and last term. As a first term, it expresses futurity; as a last term, finality. It is in both cases purely a psychic fact. 'I am receptive to this attention-object.'—'I cease to be receptive to this object.'

If this conception of will can be established, the problem ceases to exist. Man acts always in accordance with his character; his action then is self-determined. It belongs to him and he acknowledges it. Every indeterminist, whose views I have studied proves conclusively that man is self-determined, but that is an easy task. We are willing to admit it at the outset. But the proof of man's self-determination is not proof of the freedom of his will. Professor Seth, in his chapter on "The Problem of Freedom" is a fair type of all indeterminists. His solution of the problem in brief is this: "Man starts out in life with certain preformed tendencies, and is placed in a certain environment. From these two raw materials each man creates his character. They only limit the sphere within which his field of activity lies. We see sometimes the best characters arise from the most unpromising materials, and the most promising materials sometimes result in conspicuous moral failures. Success is determined ultimately not by the material, but by the free play of the energy of the self. The central problem then is the nature of this self. If, on the one hand, the self is resolvable into its phenomenal states, if these exhaust its nature, the case for freedom is lost. If, on the other hand, moral experience presupposes at each stage the presence and operation of a permanent self, the case for freedom is made good. Out of wants, out of animal promptings, out of the provocations of sensibility, the self, by an activity of appropriation constitutes motives or ends of its own activity." [1]

This activity of appropriation the determinist accepts. He raises no demurrer to Professor Seth's statement that "while the character may be the self, the self is always more than any such empirical manifestation of it, and in this 'more' which in any moral crisis rises above the character and envisages it and passes moral judg-

[1] *A Study of Ethical Principles*, pp. 345–388.

ment upon the springs of action and desire man feels present within him, it contains the secret of its moral life." This only has been proved. The self is a real agent; it does the attending, the apperceiving, the selecting, the appropriating, the criticizing, the judging, the remodeling of character—but how and why? 'By a direct effort of the will or of attention,' is the usual answer to the first question. The question 'why' we should attend or apperceive or select or appropriate the good rather than the evil, remains unanswered. The alternatives of unmotived choice or chance; of determinism by divine providence, the pantheistic solution, and of determination by interest, exhaust the possibilities. The determinist declares for the last alternative. The will is neither free nor bound. It is not a faculty, but an experience of the self—as much a psychic state as is a sensation or an emotion.

Professor James, in his essay on 'The Dilemma of Determinism,' delivers a phillipic against the determinist's idea of chance. He gives an ingenious illustration of two universes in one of which he walks down Oxford street, and in the other down Divinity avenue, but which are otherwise identical, to show that prior to choice either alternative is equally possible, while after one alternative has been chosen, the determinist comes forward to say that the other was impossible; had it been accepted it would have been due to chance, and he would make the same statement no matter which alternative were selected. His exposition of the deterministic view is unfair. When he assumes two universes differing only in the one point of the action, he assumes something that it cannot be proved ever happens. It implies that action may be initiated by nothing. The determinist would say rather: 'Had it been accepted, it would have been due to a readjustment of interest, were the action voluntary. If the action were automatic and involuntary, it would have been due to unconscious forces, which, because they were unconscious, transcend all discussion, and we have no right to label them 'chance,' because we are ignorant of their real nature.' He might add also that in the latter case, the fact that will is absent makes the example irrelevant. The recessional series with interest or chance as its ultimate term, is not an alternative between the known *versus*

the unknown, but between the known plus the unknown *versus* nothing. If by "the free play of the energy of the self," Professor Seth means that the self acts under the influence of the unknown, the determinist has no quarrel with him. But he evidently implies that the self acts under the influence of nothing, and this is what, in our view, is represented by the word 'chance.' It is because we cannot conceive that a man, for no motive, in answer to no influence, may create, out of no pre-existent germ, a reformatory desire, that "the stronghold of the deterministic sentiment is the antipathy to the idea of chance." If initiation by chance is interpreted as initiation by nothing, its absurdity is apparent.

If we leave off discussing the agency of chance, and define it with Professor James, as "the possibility that in moral respects the future may be other and better than the past has been,"[1] antipathy vanishes, for the determinist believes in just such possibilities. He is conscious in every choice that either the one or the other alternative may be realized. This 'consciousness of freedom' is to him a sense of ignorance as to which course he shall eventually pursue. Up to the moment of decision, he feels 'free' to choose either and he is free—his 'I will' may yet be given to the weaker alternative, but only by its becoming stronger through a readjustment of interest over which the will can have no direct control. The final close of deliberation by action alone makes the one impossible and the other necessary. For this reason the drunkard holds himself responsible. He has higher ideals which he fails to reach. The causes of his failure, the reasons why the evil has more interest for him than the good, may lie beyond his ken, and even more beyond the knowledge of the society in which he moves. Every man has such higher ideals, wherever they may have their source, in education or heredity or environment—ideals which have interest for him, and which he therefore strives to realize. He knows that yesterday the two possibilities were his, and he failed of the higher. That he may know all the influences which led to his failure makes little difference. They have to-day lost their vividness and reality, and he feels that he should have

[1] *The Dilemma of Determinism.*

surmounted all these difficulties and even more. His regret and his sense of responsibility are equally valid under the deterministic interpretation.

The position of the determinist is based on an exaltation of the function of attention, and a consequent diminution of the function assigned to will. The four factors in volition as popularly conceived are desire, deliberation, choice, and efficacious effort. Desire, for the determinist, is a broad term, equivalent to interest, and including both conscious and unconscious promptings to attend. Deliberation we have already defined as "a state of more or less prolonged suspense between the positive and negative apperception of attention objects." Choice is the final determining apperception itself. In these three stages of 'volition' we see only three stages in the attention process. Efficacious effort alone remains. By Professor James this effort of will is made identical with the effort to attend. It implies that, the attention-object once assured, permanency carries its own fulfillment. In ideo-motor action the mere idea alone is efficient. After a choice the state of affairs psychically is the same, a prominent idea, which, because it meets with no opposition, issues naturally in the act. Effort, then, must enter before the choice is consummated. It cannot effect the entrance into consciousness of any object or sub-object, and its function is restricted to selection between objects already present. This is determined by interest. The psychologist has fixed the field of effort to the motor or vaso-motor adjustment essential to attention. Such adjustment is unattended to until after it has been accomplished; its reverberation in consciousness is then the basis of the consciousness of effort. Therefore, such adjustment is involuntary, and the faculty of will is left without a function.

Attention—in its process of interest, conflict, motor adjustment, selection through preferential interest, apperception or choice and action—does all that is necessary and explains all there is to explain. The experience of will can differ in no respect from the experience of sensation or emotion—a psychic fact accompanying the attention process at the moment of choice, and indicative of our exclusive receptivity to the attention-object we have chosen. The pathology of will resolves itself into pa-

thology of interest or pathology of apperception. The will is free if a sensation or an emotion or a cognition is free. The determinist insists that the word freedom as applied to a psychic state, in any other sense than the possibility of its existence or non-existence, is an absurdity.

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TIME AS A DATUM OF HISTORY.[1]

The real is the organic and the organic is the real.

AS one of the data of history, of any history, time is a matter of peculiar interest in these days, when the historical method is so prevalent. To comprehend history fully one must know just what time is. Thus, is time an independent thing, external to the events or experiences that appear in it, or is it in some way intrinsic even to its content? Is it real in and of itself, even when empty, or in such reality as it has is it dependent on the nature of things, being, when taken for itself, only an abstraction of something involved in the very relations of things or in what makes and determines things, or let us say in the activity that the relations of things presuppose? Is it, in short, a mere formal condition of history, or is it a material condition?

Now, unless time should prove to be something wholly by itself and wholly formal, real even when empty, and so quite external to events, to discuss it abstractly, as I am now proposing to do, is to engage in a process of vivisection, which is always injurious when not fatal. Moreover, in this paper, time will be found to be dependent instead of independent or self-existent, related and material instead of external and formal. In its existence, in its peculiar character and in its function, it will be found to be determined by such other data of history as causation and individuality and environment, and they too by it. So at the start we may as well recognize the vivisection that we are engaged in, and, with the recognition leave the case of time open until we have studied history in all its data, and so made the living whole stand and move before us. But all real studies have to be partial, or abstract, and in the present paper we are asking only what time is, and particularly, to begin with, upon just what grounds the self-existence or the formal character of time is to be denied.

[1] This paper is an elaboration of certain suggestions about the relation of time to history in the concluding paragraphs of an article, "Evolution Evolved—A Philosophical Criticism," in the current number of *The Monist*.

Of course this question of the dependence or self-existence, of the material or formal character of time is to be seen as only a special case of the general inquiry, with which modern thought has been so thoroughly imbued, as to whether the one and the many, unity and differences, are or are not intimate functions of each other. Are differences essential to unity, or is unity an abstract, external something that is altogether independent of the differences in whatever is unified? In the conception of the organic, we have the one and the many, unity and differences, presented to us as absolutely interdependent and interdetermining, but even in these days not everybody, not even every biologist, is willing to accept all the consequences of this conception. As regards time, then, it is only one of the ways or media through which differences are unified. It is, to be sure, an extremely physical form of unification, but herein is nothing to place it out of the category to which I have assigned it. Space is another so-called physical form of unification, and philosophy is still asking about it, as about time and about unity, in senses much less physical, if it is external or intrinsic to the things that it unifies. Our present problem, then, is no peculiar problem; it is not isolated; and simply to have seen it in its larger relations, or in its general character, will surely be of some help in the solution.

But now to turn directly to the business of this paper, suppose we consider the conclusions that naturally spring from regarding time as self-existent or formal. Four conclusions, which all merge into one as they are understood, have seemed to me worthy of mention.

Thus, in the first place, if time is merely formal, all events in time are necessarily external to each other, and a history of merely dated happenings, a history that makes no study of laws or of causes or of an organizing process, is justified. Indeed, no other history than that of separate events with dates would be possible. To appeal at once to the general case, if you make the unity of things external to their differences, you are bound therewith to separate completely the things themselves. This is stupidly commonplace. But, specifically, if you make time external to events, you turn history into nothing but a broken series. I say

a broken series, for continuity even in the most physical sense would be undiscoverable in it. A self-existent purely formal time, by taking continuity to its empty self, denies it to the mere content of time.

Secondly, if time is formal, the things in time are sudden. Here, quite evidently, we have but another way of viewing the isolation referred to in the previous paragraph. Nations, men, institutions are to be thought of as arising out of nothing and, after persisting in a certain fixed form, disappearing as suddenly as they come. Whatever is at any time is only that particular thing which it is, being without any changing or adapting or differentiating nature or power to relate it to other things. No doubt we are sometimes given to living as if time were only a formal condition, and life-histories are often written on the same assumption; but the result is to make the time pass without any real achievement of ours, life for us being as empty as the time containing it, or in the case of a life-history to have to explain the changes through some external cause, a brutal chance, perhaps, or a lawless miracle. In a formal time, history is not a record of positive achievement, but a record of only sudden happenings or miraculous interventions.[1]

In other words, thirdly, if time is formal, the events in time are naturally and necessarily under the control of some wholly external, and therefore wholly arbitrary agency. To a people, for example, subject to some absolute monarch, or to some infallible church, where monarch or church is supposed to get its authority from a world or a nature wholly alien to this world and to human nature, time is a mere form, the present having no positive significance, and the past and the future being unreal just because past and future.[2] What wonder that through the Middle Ages, when absolutism or other-worldism was so general, the things of time were so illusory, and predictions of an early millennium were very common, and the real or the spiritual was made antithetical to the temporal!

[1] Conversely, in a statement that should interest any surviving Kantians, if the happenings are not sudden, the time containing them is not formal.

[2] When time is self-existent and formal, the present is only the absolute or durationless now, the past is the wholly and hopelessly gone, and the future is that and only that which has not yet come.

But, fourthly, in the illusory character of time that follows from thinking of time as formal, self-existent, or external, lies perhaps the most serious, the most thoroughly condemning conclusion of any that have been mentioned. The isolation of events from each other, the sanction of suddenness in things, and the positive recognition of a controlling agency without, are condemnatory enough, but for my own part I find the notion of time, or of anything else for that matter, as an illusion peculiarly offensive. Those other conclusions stood at least for the moment without question, but here the need of a radically different view of time is absolutely imperative. To find an illusion is hopelessly to unsettle the point of view from which it is found, and to enforce adoption of another point of view. *Summarily, if time is ever an experience, then the real and even the spiritual, if there is any difference between the two, must be temporal.* But the real or the spiritual, somebody reminds me, must be eternal. Very true, and in consequence there must be a sense in which the temporal and the eternal are not mere opposites or mere negatives of each other, and can we not find this sense? Can we not bring eternal reality or eternal spirit into the temporal? Can we not find in time, not something that is self-existent, since the self-existence ends in an illusion, but something which will conclusively show time to be only an abstraction of some *essential* character in the sphere of the real? If we can, to say no more, history will be transfigured.

To make time *essential* to the real is to relate events positively or organically, to do away with all sudden beginnings and endings, to find the control of changes, not in an external, and therefore arbitrary agency, but in the actual nature of that which changes and is controlled, in an indwelling and only self-realizing process of things, and, above all, to make both the past and the future actual in the present, and at one with it. Obviously, a self-controlling process, a process that has its own determinations within itself, within its own natural conditions, can manifest only such differences as are organically, which is to say concretely, related, and it can have only such a past and such a future as are not external to the present and so illusions, but actual contents

or relations of the present. At every moment of its expression, a self-controlling process must both recapitulate its past, and anticipate its future.

What the foregoing means is to be found, at least in part, in that to which it is opposed. Negations always afford important help in interpretation. Still the direct or positive statement calls for more than mere statement. So just what are related events? What is involved in the elimination of sudden changes? How can control be from within? And what is it to have past and future also present? Can it really be that paradoxes such as these four are true?

Related events, which are of course sequent, are in principle like the successive experiences that one has when taking a walk. The stages of one's progress, whether of future or past, are always present in the form of actual relations in the sphere of the activity. The walking is somehow only the temporal expression of spatial relations, the fulfilment of coexistences in sequences or of sequences in coexistences, and such expression of fulfilment would be impossible were there not an actual and complete organic unity in all the differences involved. The action, I say, or the walking, can be but the expression of already existing and ever-existing relationships. Were the expressed relations not rooted in some permanent organizing unity, were they not existing and persistent, it is hard, nay, it is impossible to see how the activity could ever come about, or how the agent could ever know what he was doing. Merely that he may know what he is doing, an agent needs an environment as a sphere of *coexisting* things or objects, in whose relations he has repeated to him the past moments of his progress and foretold to him the future moments. Without the knowledge, moreover, the action itself cannot be.

And in the circumstances of the illustration, we see also what is meant by the elimination of sudden changes. The peculiar relation between the sequent and the coexistent that the conditions of activity evidently require, makes continuity, as that alone in which the two can be at one with each other, a necessity. Indeed, continuity is only a physical conception of relationship. Here, however, we do well to broaden our view by thinking of

the long historical process of evolution, which is not essentially different from the process of walking. The larger facts of evolution will help us to a still clearer understanding, both of the relationship of events, and of the continuity of change. Evolution has occurred not only in a creature that has evolved and is still evolving, but also in a *vitally* related environment by which the creature's past and the creature's future are made concretely present. Moreover, a consciousness of the environment is as necessary a condition of the evolutional process *in any one of its stages*, as was the pedestrian's recognition of his coexisting surroundings a constantly necessary condition of his progress. Evolution needs consciousness, and consciousness, in our larger illustration as in our smaller, means both a relational unity of coexistences and a continuity of sequences.[1]

[1] In a recently published address by Professor J. McKeen Cattell, whose standpoint is that of many, we find the following: "Much is being written just now regarding the relation of consciousness to the brain. The question is: Do perceptions, thoughts, feelings, volitions stand in causal interaction with the brain or are they an epiphenomenon, accompanying changes in the brain but not influencing them? Are our ordinary actions complex reactions due to physical stimuli and the structure of the nervous system, or are the changes in the brain that precede movements initiated and directed by consciousness? The question is one of facts that should be settled by scientific methods, and the solution will by no means concern psychology alone. The two greatest scientific generalizations of the present century are the conservation of energy, and evolution by survival of the fittest. Now, if consciousness alters, however slightly, the position of molecules in the brain, the fundamental concept of physical science must be abandoned. If consciousness have no concern in the actions of the individual, we have one of the most complex results of evolution developed apart from the survival of useful variations, and the Darwinian theory has failed. Surely both the physicist and the biologist must watch the steps towards the solution of a problem that concerns them so nearly." Indeed they must, but what does all this mean? Is it serious thinking or only thinking for thinking's sake? Are the best results of physics, or the great truths of biology to hang in suspense on some experiments, however scientific, in a psychological laboratory? And what if consciousness should be quite as much a condition as a result of evolution? Here is a possibility that, to say the least, should be recognized. A result that is not also a condition is certainly very hard to think, whatever science with her questions of fact may be disposed to say. Moreover, what is there in the doctrine of conservation of energy, when you really understand it, to shut consciousness out of the sphere of 'physical' processes—provided of course, the consciousness itself be a seriously rational consciousness? Conservation of energy really means something. It means unity, rationality, law in the physical world, nay, more than this, it is fundamentally hostile to molecules or atoms, being interested in transmutation, not in force-endowed elements, and standing in the minds of physical scientists for what is virtually the very same sort of unity that an evolutional biology has found in its conception of the organic. In behalf of physics I

In the primary importance of consciousness to evolution, there is to be had still another view of what now interests us. In a word, life and consciousness cannot possibly be thought of as apart from each other. Consciousness is as original as life, or as the organic, and in their common origin or, as the same thing, in their constant contemporaneity, is evidence of the unity of life and consciousness. Life, because it is life, is conscious. Consciousness is intrinsic to life; it is not under any conditions epiphenomenal. To make consciousness a sudden appearance in the evolution-series is to separate it, not only at its origin, but also forever, from the life to which it is attached. Some scientists, whose eyes must be closed to their own visions, seem to enjoy the strange conceit that science, as the best expression of man's consciousness, is solely for science's sake; but the same blind gazers, as if unwittingly correcting their unseen error, have been wont to raise animals to man's level by making the animal-consciousness also epiphenomenal or for its own sake, and to raise the still "lower" forms of life to the animal's level by denying consciousness to them altogether; but the very evolution which they unwittingly justify in this indirect way is impossible on their scheme. Evolution demands a consciousness, or, if you will, a science, or a thought, or a mind, or a useful sensitiveness of some kind that is *intimate* with the nature of whatever evolves. But time as the form in which the sequences of evolution appear is a peculiar condition of consciousness, so that in identifying life and consciousness we do in just so far make time essential to reality. True, somebody is likely to turn about and say that life itself is not essential, that life began in time by some process of abiogenesis, or spontaneous genesis, and is not an ultimate fact in the reality of the present, and that time, therefore, is not of such a nature as to make the temporal and the eternal one. But to such an objector it seems necessary to reply only that he means much

venture to say that the molecule has long been dead and present to thought only as an empty ghost to disturb the timid and unwary. Of course, to any one who must think of consciousness as a peculiar property of the brain, or of any separate physical part, Professor Cattell's question must be a 'question of fact'; but consciousness, exactly like motion or force or life, is not the indwelling property of anything; in a single word, it is an interaction, an organic tension, and as of this character it is itself a principle of conservation. For Professor Cattell's address, see *Science*, Oct. 21, 1898.

less by life than we do. For us the life that can evolve is not the special and peculiar endowment of any isolated body, or of any group, large or small, of isolated bodies; it is a property or an activity in the universe as single and indivisible. With life so established and conscious in and of itself, the idea of time as essential to reality is unassailable.

Now, in summary, life or action in its temporal sequences is but the continuous expression of the persistent relationships of coexistences. Confessedly this formula is not exactly a pleasant one, but it is at least intelligible to all who walk, or run, and to all also who, knowing the story of their evolution, look out upon their present environment, which is so obviously at once the recapitulated but contemporized past and the anticipated but contemporized future. Furthermore, that life under this formula is self-determined can now go without anything more than the mere statement. Simply there is no creation implied to make determination from without necessary. There is neither an external and bygone past, nor an external and unborn future to act upon the present and make it helpless.

But of the need, involved, as has been seen, in making time so essential to reality, of finding the past and the future actual in the relations of the present, still more may be said profitably. Perhaps we are not accustomed to look upon a creature's environment[1] as its past and future organically contemporized with the present, but in other ways we are at least indirectly familiar with the idea. Memories are recognized as states of mind that are to be referred to *present* organically related physiological processes, and the same is true of prophecies or foresights. Also, as evolutionists or historians, we are wont to explain the past or the future by appealing to principles that we look upon as independent of any of the distinctions of time. Evolutionists to-day are in so many ways relying on mechanics, or chemistry, or physics, which in so far as they are exact sciences are also timeless sciences, and historians use nature and nature's laws

[1] It has not seemed necessary for me to say before, and possibly it is not necessary to say now, that as I use the term environment I would have it all-inclusive. A creature's own body is an organic part of its environment.

in their accounts of human achievement and progress. That laws, however, or principles are always contemporizing agencies, bringing the past and the future to which they are applied into the present, is all but axiomatic. So we are brought back to the view of environment already given, since environment is not only the sphere of life's coexisting conditions organically related, but also, as an object of consciousness, the very incarnation of a more or less clearly recognized law. Exactly that law, which environment is, is that which contemporizes past, present, and future. The biological doctrine of recapitulation, if taken for what it is in reality, a doctrine of a lawful contemporizing environment, as well as of the organic unity of an individual creature, offers a very good concluding indication of what is meant by time as essential to reality, or by any of the consequences of this essence-theory of time, by the relation of events, the continuity of change, the indwelling nature of control or determination, and the contemporaneity of past and future with the present.

And now again the question with which this paper began: What is time? Plainly time is nothing in itself. An abstract definition of it, however, may be derived from the foregoing, although I should almost prefer to let what has been said stand as it is without this addition. Time in and for itself alone, time as mere duration, is definable as a physical or quantitative abstraction; for organic unity in so far as organic unity involves change; or, differently and somewhat metaphorically put, it is the change or motion that is inherent in the organic, projected upon the plane of mere measureable quantity. Similarly, space is the permanence of the organic on the same plane. But, in a statement which is possibly a shade less abstruse, time is the factor in experience that, taken by itself, expresses at once the necessity—the past—and the opportunity—the future—that a world of related differences naturally affords; no mere form of life, then, self-existent and formal, but even a force, or a phase of a force, in application of which or in identification with which life consists. Those who live do not live in time; they live time itself, they *use* time; and a life that uses time is as eternal as it is temporal.

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REVIEWS OF BOOKS.

An Essay on the Foundations of Geometry. By BERTRAND A. W. RUSSELL, M.A., Fellow of Trinity College, Cambridge. Cambridge, The University Press, 1897.—pp. xvi, 201.

Geometry possessed much of interest for philosophers in the last century when a belief in the perfection and completeness of the science held sway. It has much more interest for them at the present time, for Geometry is now known to be a science broader in its range and more varied in its methods than the philosophers of a hundred years ago had imagined. A great deal more has been done on the Continent than in England and America in the important and difficult work of examining the foundations of a science which has received wonderful and extensive additions especially in the last three decades. Accordingly, the appearance of an English work dealing with the Foundations of Geometry may be regarded as an event worthy of note.

A complete discussion on the foundations of Geometry would include what students of Metaphysics and Logic, what the psychologist and the physicist, as well as what the mathematician would have to say. In this essay, Mr. Russell confines himself solely to the *logical* questions and problems which arise in connection with his subject; he leaves to others the treatment of Geometry from the point of view of psychology and metaphysics. He has given us a volume which is valuable both to the mathematician and to the philosopher. The chief significance of this work, which the reviewer will attempt to summarize rather than to criticise, lies in the fact that old questions of fundamental importance are raised anew in the light of modern advances in mathematical research; and at a time, too, when the problems dealt with are claiming especial interest and attention. The book is written in a lucid and attractive style, and its matter is well arranged and clearly presented. Its most important feature is that it contains the first presentation of projective Geometry yet made to philosophers. Hitherto, the latter have not taken account of projective Geometry, because they have not perceived the distinction between it and metrical Geometry.

The essay is divided into four chapters. Chapter I. gives a short history of the geometries which introduce ideas different from those of Euclid; and Chapter II. contains a critical account of some previous philosophical theories of Geometry. The way is thus prepared

for Chapter III., which is constructive and is the principal part of the book. It consists of two sections which are devoted respectively to the axioms of projective Geometry and metrical Geometry. Some questions of a less geometrical and a more general philosophical nature which arise in Chapter III. are discussed in the final chapter.

Mr. Russell explains carefully the sense in which he uses the word *a priori*. He defines *a priori* knowledge as consisting of "the postulates which are necessary to make knowledge possible at all and of all that can be deduced from these postulates" (pp. 2–5, 60). His test of apriority is purely logical. The term *a priori* is used without any psychological implication; the discussion of what is subjective is regarded as a part of Psychology, and the question of the relation of the *a priori* to the subjective as belonging to Metaphysics. The history of Metageometry aims to set forth the leading mathematical principles of successive periods in the development of Geometry, and to furnish the reader merely with the technical knowledge sufficient to enable him to consider the logic of the subject. On this account the sketch is brief, and does not refer to the work of some of the great modern geometers. Probably most students of philosophy will require the assistance of a mathematical friend in reading some portions of the essay.

The history is divided into three periods which differ from one another in their philosophical and mathematical aims and methods. In the first period, which is marked by the names of Gauss, Lobatchewsky and Bolyai, logically consistent Geometries were obtained by denying Euclid's axiom of parallels. This axiom was, therefore, shown to be logically independent of the others and essential to the Euclidean system of Geometry. The second period was under the guidance of a philosophical spirit which "aimed at no less than a logical analysis of all the essential axioms of Geometry." Riemann and Helmholtz were the chief investigators of this period, and the two fundamental conceptions used were that of *a manifold* and that of *the measure of curvature*. "Conceptions of magnitude, according to Riemann, are possible there only, where we have a general conception, capable of various determinations. The various determinations of such a conception together form a *manifold*, which is continuous or discrete, according as the passage from one determination to another is continuous or discrete" (p. 15). Space is defined as a species of manifold. This definition assumes that space can be regarded as a quantity, but leaves obscure the ground for regarding space as a system of magnitudes at all. The conception 'measure of curvature,' which was first applied by Gauss

to surfaces, was extended by Riemann to a manifold of n dimensions. It is often forgotten that in the latter connection the measure of curvature "is a purely analytical expression which has only a symbolic affinity to ordinary curvature." The essay states that, "Riemann, in spite of his desire to prove that all the axioms can be dispensed with, has nevertheless, in his mathematical work, retained three fundamental axioms, namely, free mobility, the finite integral number of dimensions, and the axiom that two points have a unique relation, namely, distance" (p. 22).

In the third period, space is dealt with by descriptive rather than quantitative methods. Projective Geometry deals only with quality—for which reason it is called descriptive—and cannot distinguish between two figures which are qualitatively alike. Operations with quantity are employed in projective Geometry, but the quantities used are not spatial magnitudes. The coördinates used in projective Geometry "are not coördinates in the ordinary metrical sense, *i. e.*, the numerical measures of certain spatial magnitudes. On the contrary, they are a set of numbers, arbitrarily but systematically assigned to different points, like the numbers of houses in a street" (p. 119). But for the brevity of the alphabet they might as well be letters. The usual method of defining projective coördinates involves the notion of distance measured in the ordinary way. Klein has shown, however, that by means of a certain construction these coördinates can be defined by purely descriptive properties. Cayley suggested a particular function of the projective coördinates of two points as a new definition of the distance between them on a Euclidean plane. If the projective coördinates be chosen in a particular way, the value of this function is the same as that of the ordinary distance between the two points; if the projective coördinates be chosen in certain other ways, this function will give the distances between the two points in the various non-Euclidean Geometries of three dimensions. It follows that we obtain the formulæ of the several Geometries according as we choose our projective coördinates, that to each proposition in one Geometry there corresponds a proposition in each of the other Geometries, and that if there is a contradiction in one of them, there is a corresponding contradiction in each of the others. Geometry thus appears to depend upon the definition of distance applied on a Euclidean plane. This definition is arbitrary, and therefore some look upon geometric axioms as mere conventions. Mr. Russell, however, argues that projective properties are inadequate to express metrical properties, because the former have no metrical presupposition. The

reduction of metrical to projective properties is merely a technical device, and the values obtained for the function employed in the projective definition of distance should not be confused with distance in the ordinary sense. This reduction depends, with the exception of the case of hyperbolic space, on the use of imaginary figures, and hence the author takes up Cayley's challenge to philosophers made at the meeting of the British Association in 1883, concerning the right of philosophy to ignore the use of imaginaries which play such a large and essential part in modern Analysis and Geometry. The first chapter is summed up thus: "We have seen how the philosophical motive, at first predominant, has been gradually extruded by the purely mathematical and technical spirit of most recent Geometers. At first, to discredit the Transcendental Æsthetic seemed, to Metageometers, as important as to advance their science; but from the works of Cayley, Klein or Lie, no reader could gather that Kant had ever lived. We have also seen, however, that as the interest *in* philosophy waned, the interest *for* philosophy increased: as the mathematical results shook themselves free from philosophical controversies, they assumed gradually a stable form, from which further development, we may reasonably hope, will take the form of growth, rather than transformation" (p. 50).

The modern representative theories of Geometry, beginning with that of Kant, are criticised in the second chapter. Metageometry has destroyed Kant's argument that since Geometry is known to have apodeictic certainty, therefore space must be *a priori* and subjective. But Kant argues conversely that, since it follows from grounds independent of Geometry that space must be *a priori*, therefore, Geometry must have apodeictic certainty. This argument is attacked on the philosophic side. The discussion on Kant's treatment of space involves a review of the arguments against his theory of synthetic and analytic judgments. The conclusion regarding Kant's argument for the apriority of space is that its "*logical* scope extends, not to Euclidean space, but only to any form of externality which could exist intuitively, and permit knowledge in beings with our laws of thought, of a world of diverse but interrelated things" (p. 62).

Riemann's definition of a manifold is obscure. Moreover, a qualitative basis must be implied in the definition of space as a collection of magnitudes, but none of the essential properties of space can emerge from the conception of space as a magnitude. Hence dissent is taken from the disjunction which underlies Riemann's philosophy of space: namely, either the axioms must be consequences of general conceptions of magnitude, or else they can be proved only by experience (p. 65).

It is shown that Helmholtz did not rigidly apply his criterion for the empirical. He also asserted that we *can* imagine non-Euclidean spaces, things which can be described in conceptual terms being regarded as imaginable; but "this is not the sense required for argumentation in this case." The most important question in Helmholtz's theory is the relation of Geometry to Mechanics involved in his appeal to rigid bodies. He seems to think that we infer the homogeneity of space from our experience of rigid bodies. But "to make Geometry await the perfection of Physics, is to make Physics, which depends throughout on Geometry, forever impossible. As well might we leave the formation of numbers until we had counted the houses in Piccadilly" (p. 81). The author, however, thinks that some sort of matter is essential to Geometry. "This geometrical matter is a more abstract and wholly different matter from that of Dynamics," and possesses nothing but spatial adjectives. Erdmann, the strongest philosophical defender of the theories of Riemann and Helmholtz, has ultra-empirical views. His theory is not applicable to projective Geometry. Following Riemann, he subsumes space as a whole under a general conception of magnitude. The criticism on this involves a discussion on the logical nature of judgments of magnitude. The latter are judgments of comparison, and quality is supposed identical in the object whose magnitude is stated and in the unit with which it is compared. Now there is a difference of quality in the various spaces, and therefore there is no qualitatively similar unit in the three kinds of space. Moreover, two different spaces cannot coexist in the same world and hence comparison is impossible. "The fact seems to be that Erdmann, in his admiration for Riemann and Helmholtz, has fallen in with their mathematical bias, and assumed, as mathematicians naturally tend to assume, that quantity is everywhere and always applicable and adequate, and can deal with more than the mere comparison of things whose qualities are already known as similar" (pp. 85 f). It is shown also that Erdmann's conclusions regarding the principles of Geometry "are largely invalidated by the diversity and inadequacy of his tests of the *a priori*."

Lotze discusses the various meanings logically assignable to the proposition that other spaces than Euclid's are possible, and endeavors to show that the logic of the non-Euclideans is faulty. Mr. Russell holds that it is the philosophical bearing of Metageometry alone which constitutes its real importance. Metageometry has suggested the proof of the possibility of the existence of non-Euclidean spaces which conform to certain logical conditions that may be summed up in the

relativity of position. Hence the truth of Euclid is determined by experience. "They (non-Euclidean spaces) throw light on the nature of the grounds for Euclid, rather than on the actual conformation of space" (p. 98). Lotze's attack on non-Euclidean logic is weak. Some of his arguments in this connection fail, because he is mistaken in his elementary mathematics; other arguments are worthless because he is mistaken as to what Metageometry really is. Lotze obtained his ideas concerning Metageomety from Helmholtz's attempts at popular explanation of the subject. It is unfortunate that philosophers should regard Helmholtz as the typical exponent of Metageometry, especially "after the very material advances brought about by the projective treatment of the subject. It is also unfortunate that his somewhat careless attempts to popularize mathematical results have so often been disposed of, without due attention to his more technical and solid contributions. Thus his romances about Flatland and Sphereland—at best only fairy-tale analogies of doubtful value—have been attacked as if they formed an essential feature of Metageometry" (p. 101). It is the opinion of the essayist that the recent speculations in France on the foundations of Geometry have added but little to geometrical philosophy. After the history of Metageometry and the philosophical criticisms described above, it is stated that "the logical validity of Metageometry, and the mathematical possibility of three-dimensional non-Euclidean spaces, will therefore be regarded, throughout the remainder of the work, as sufficiently established" (p. 109).

Chapter III. deals with the axioms of projective and metrical Geometry respectively. Since pure projective Geometry is not concerned with magnitude, and Euclidean and non-Euclidean spaces differ merely in their metrical properties, we may expect that in projective Geometry we can find the properties which are necessary and common to all possible spaces. The chapter begins with the mathematical explanations necessary to show how the "qualitative science of abstract externality, which is projective Geometry," is built up. Qualitative definitions of anharmonic ratio and harmonic range, the method of assigning projective coördinates to different points on a line, and the fundamental operations of projective Geometry are set forth; and the general principle of projective equivalence is stated and explained. "Two sets of points or of lines, which have the same anharmonic ratio, are treated by projective Geometry as equivalent: this qualitative equivalence replaces the quantitative equality of metrical Geometry" (p. 123). It is shown that the only reason within projective Geometry for not regarding projective figures as actually identical, is the intuitive perception of dif-

ference of position. This is "the essence of the notion of a form of externality, which notion forms the subject-matter of projective Geometry." The essential axioms on which the reasoning of projective Geometry is based are stated and proved to be necessary to any form of externality, the latter term being defined as the bare possibility of diversity among interrelated things. It is found that the most obvious prerequisite of absolute qualitative equivalence is the homogeneity of space, and hence that all position is relative. Homogeneity and relativity of position are shown to belong of necessity to any form of externality, and are, accordingly, *a priori* properties of all possible spaces. Next is discussed the principle that any form of externality must have a finite integral number of dimensions. Finally, it is proved that any two positions must have a relation independent of any reference to other positions. In spatial terms this relation is the straight line joining the two points. The difficulties which appear in the course of this deduction of projective Geometry from the *a priori* conceptual properties of a form of externality, are postponed to Chapter IV. The author remarks: "For the present, I wish to point out that projective Geometry is wholly *a priori*; that it deals with an object whose properties are logically deduced from its definition, not empirically discovered from data; that its definition, again, is founded on the possibility of experiencing diversity in relation, or multiplicity in unity; and that our whole science, therefore, is logically implied in, and deducible from, the possibility of such experience" (p. 146).

Projective geometry cannot distinguish between Euclidean and non-Euclidean spaces, but metrical geometry can do so by its quantitative tests. The idea of motion also appears in metrical geometry. Just as the axioms of projective geometry are deductions from the possibility of the experience of externality, the axioms of metrical geometry are deductions from the possibility of spatial measurement. The essential axioms of these geometries are equivalent and differ only slightly in form. To the axiom of the homogeneity of space corresponds that of free mobility; to the axiom of the straight line corresponds that of distance; and the axiom of dimensions is the same in both geometries. The author shows the double apriority of the axioms of metrical geometry, namely, that they are presupposed in all spatial measurement, and also that they are necessary properties of any form of externality. The argument, which cannot be repeated here, is carefully and successfully elaborated. From the investigation, it follows that "the *a priori* element (of geometry) may be defined as the axioms common to Euclidean and non-Euclidean spaces, as the axioms deducible from the conception

of a form of externality, or—in metrical geometry—as the axioms required for the possibility of measurement" (p. 177).

In the fourth chapter, the author discusses, with great modesty, some of the philosophical questions and difficulties which have arisen in the preceding portion of his essay. The first part of the chapter is taken up with a consideration of the question: "What relation can a purely logical and deductive proof, like that from the nature of a form of externality, bear to an experienced subject-matter such as space?" Why is it possible to deduce from a mere conception, like that of a form of externality, the logical apriority of certain axioms as to experienced space? The reply is that sense-perception necessarily contains as an element some form, the conception of which is included under our form of externality.

The latter part of the chapter contains a discussion on some of the contradictions arising out of the relativity and continuity of space, which have obtruded themselves in Chapter III. The contradictions are shown to be inevitable. An attempt is made to remove them by restoring the notion of matter as that which is localized and interrelated in space. In the search for an element of space, we come upon the point, a thing in space without spatial magnitude; that is, that which is not spatial fulfils the function of a spatial element. The contradiction arises "from the attempt to deal with empty space, rather than with spatial figures, and the matter to which they necessarily refer." This matter is not regarded as having physical or causal properties, but as abstracted from them, and merely supplying the terms for spatial relations. "We must find, therefore, in our matter that unit of differentiation or atom, which in space we could not find:" this atom will appear to geometry as a point. The material atom will also aid us in getting rid of the circle in the definitions of straight lines and planes. The straight line may now be defined as a spatial relation between two unextended atoms; and straight lines and planes are the true spatial units. Another contradiction is that space appears as at once relational and more than relational. On the one hand, space must be regarded as relations, and relations are necessarily indivisible. On the other hand, space appears to be infinitely divisible. In discussing this antinomy, it is essential to distinguish clearly between empty space and spatial figures. Kant argues that empty space is an intuition and not a concept, and that it must be known before spatial order becomes possible. Mr. Russell maintains, "on the contrary, that it is wholly conceptual; that space is given only as spatial order; that spatial relations, being given, appear as more than mere

relations, and so become hypostatized; that when hypostatized, the whole collection of them is regarded as contained in empty space; but that this empty space itself, if it means more than the logical possibility of space relations, is an unnecessary and self-contradictory assumption" (p. 194). "Empty space is undifferentiated and homogeneous; parts of space, or spatial figures, arise only by reference to some differentiating matter, and thus belong rather to spatial order than to empty space. If empty space be the pre-condition of spatial order, we cannot expect it to be connected with spatial relations as genus with species. But empty space may nevertheless be a universal conception; it may be related to spatial order as the state to the citizens. These are not instances of the state, but are contained in it; they also, in a sense, presuppose it, for a man can only become a citizen by being related to other citizens in a state" (p. 195). Another ground for condemning empty space is found in the mathematical antinomies; for these arise only in connection with empty space, and, when only spatial order is regarded, unbounded extension and infinite divisibility both disappear. That we cannot but regard space as having thinghood and as being infinitely divisible, is explained as a psychological illusion unavoidably arising from the fact that spatial relations are immediately presented. The apparent divisibility of the relations constituting spatial order is explained by a reference to the matter described above. The conclusion is: "Space, if it is to be freed from contradictions, must be regarded exclusively as spatial order, as relations between unextended material atoms. Empty space, which arises, by an inevitable illusion, out of the spatial element in sense-perception, may be regarded, if we wish to retain it, as the bare principle of relativity, the bare logical possibility of relations between diverse things. In this sense, empty space is wholly conceptual; spatial order alone is immediately experienced" (pp. 197 f). The endeavor to overcome the contradictions in space has been made by reference to a certain matter described as having merely spatial adjectives, its non-spatial and causal properties being left out of account. The essay ends thus: "To deal with the new contradictions involved in such a notion of matter, would demand a fresh treatise, leading us, through Kinematics, into the domains of Dynamics and Physics. But to discuss the special difficulties of space is all that is possible in an essay on the Foundations of Geometry" (p. 201).

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Die Grenzen der naturwissenschaftlichen Begriffsbildung. Eine logische Einleitung in die historischen Wissenschaften. Von Dr. HEINRICH RICKERT, Professor an der Universität Freiburg i. B. Erste Hälfte. Freiburg i. B., und Leipzig, I. C. B. Mohr, 1896.—pp. 304.

We have in this volume the first part of a work which proposes to deal with the relations between natural science and history, and with the mode in which these disciplines treat experience. In this first part, which lies before us, attention is given chiefly to the work of natural science, the object being to show in what way that work is limited; this, however, is subsidiary to the main object which is the vindication of the distinct, specific position of historical science. It is one of the worst evils of modern thought that it has been too much influenced by natural science. The present work is intended to help in counteracting that influence.

The first chapter deals with "the conceptual knowledge of the physical world." That world as presented to us in perception is infinite, extensively and intensively; consequently the attempt to make an exact copy of that world is futile. The work of science is of a different kind; it lies in overcoming this complexity by its system of concepts and laws. Our ordinary general names, by which an indefinite manifold is indicated, show how this process begins. Science consists in simplification, both of the number of objects indicated, and also of the qualitative content. Scientific concepts must be definite, this end being secured not by means of a representative image, but by a series of judgments which can be unfolded in regular order, and of which the essential elements can be raised from the indefinitely complex representative background. In regard to the validity of concepts, we have to note that all science which is not mere empiricism seeks to attain complete generality in its judgments; in other words, to state unconditional laws. No mere arbitrary description can be scientific; so far as a description is more than this, it can be carried out only on the presupposition of universal necessary connection. If, however, science seeks such completely universal statements, does not the conception of 'thing' disappear to make way for that of 'relation'? In answer, it is to be observed that in much of science the concept of definite ultimate things is merely provisional, and is transformed on deeper analysis into that of relation. Only in the highest and most unified form of natural science, do we require to postulate ultimate unanalyzable elements or things. Reference is made to the work of two eminent scientists to show how physical science supports the views here urged from a logical standpoint.

The principles thus found to hold for the science which deals with material bodies are applied in the second chapter to mental science. It is first shown that the true division of sciences is one according to method, not one according to subject-matter. Our knowledge of psychical facts is not more immediate than our knowledge of physical fact. In psychology, again, we find the same simplifying process employed: there is the same necessity of making concepts definite, and of transcending, even in description, the narrow field of individual experience. In psychology, further, we need the hypothesis of ultimate elements, which cannot, any more than atoms, become objects of experience. The quantitative aspect fails here possibly; but then it is not present everywhere in natural science, and indeed is not so much an ultimate factor, as a means towards attaining the end of scientific knowledge, viz., simplification. In the term 'nature,' rightly considered, we find not so much the designation of a certain province, or subject-matter, as the indication of a point of view; reality is looked at from the side of the universal, of law and system. If this be granted, then there need be no hesitation in treating psychology as a natural science.

In the third chapter headed 'Nature and History,' Dr. Rickert inquires: 'What is the attitude of natural science to reality in general?' The answer is that natural science is limited by its inability to reproduce the endlessly complex reality; it is more perfect the more universal its laws, and the less of every-day actuality it includes. This may be said of psychology in spite of the contest of psychological theories; it can be said with more certainty of physical science. Abstract physical science does not depend on presentation or representation any more than abstract mathematical science. In this limit of science, however, is found the opportunity of history; the province of this type of knowledge is the concrete individual, the particular event as defined by space and time, which remains outside the scope of natural science. Wherever interest is concentrated on what is actual with all its endless specific complexity, there we have the working of the historical spirit. History neglects the search for laws, for what is universal. This, however, is not due to the complexity of its phenomena, but to the fact that the historian has no interest in that which is common to many individuals and occurrences. We have here to deal with the opposition, not of being to becoming, but of the concept to reality. Both scientific and historical elements are to be found in the various departments of knowledge, but their presence and coöperation do not destroy their essential independence and difference.

When we ask what is the final worth of this acute and careful investigation, we are hampered by the fact that the main point must perforce be left out of account, viz., the positive conception of historical science. We can only mention in passing the doubt whether there is any place left for history as science. The fundamental thought of the discussion seems to be this: natural science cannot give a copy, *Abbild*, of empirically real experience, therefore all that it does is unreal. This suggests the criticism that the argument involves a misconception of experience and our cognitive relation to it. The absolutely particular event, if such a conception be possible, is an object neither of interest nor of knowledge; only so far as it is recognized as related does it become such an object. Now it is this relative aspect of reality which science seizes and expresses in the form of law and principle. It is not the whole of reality. But even an image copying a detail of experience is not the reality, and can serve only as a more or less useful substitute for it. In giving this version of scientific research, it follows that the importance given by Dr. Rickert to the notion of simplification is disallowed. Simplification is, to put the distinction sharply, an incident rather than an end in scientific discovery. The true investigator welcomes unification as he welcomes differentation. Dr. Rickert allows to the judgment validity (*Geltung*) in place of reality, but gives no further exposition of this concept. This is somewhat unfortunate, for the point is one of the most important in the discussion. Only one more subject can be touched on here. In the final perfect science, as we saw, room was to be left for ultimate elements, "last things." These last things are unchangeable, indivisible, and without different quality. The reason given is that, if they were not so constituted, science could never be perfect; if, for example, there were qualitative variation, then it would be forever impossible for science to be certain that its account was complete, and that no new variation could disturb its system. I cannot see that a science which sincerely accepts the experimental method can make such claims, or that any limit can possibly be set to the complexity and ultimate differences in things. Only from a metaphysical standpoint can such a claim be urged, and for the purposes of science such a claim has hardly more value than that of a suggestion.

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Theories of the Will in the History of Philosophy. By ARCHIBALD ALEXANDER. New York, Charles Scribner's Sons, 1898.—pp. viii, 357.

Histories of philosophy are numerous, but histories of particular philosophical themes are rather uncommon. And the reason is plain; most philosophical themes are so interconnected, and so closely related to the fundamental problem of knowledge, that a man's position with regard to any one of them is generally an index to his views on all the rest. Consequently, it is hardly possible to treat any one of his doctrines apart from the system to which it belongs. Theories of the will, however, as Mr. Alexander remarks, are, to a great extent, independent of systems, so that we cannot infer a man's views with regard to determinism or indeterminism, for instance, from the general character of his philosophy. Theories of the will, therefore, admit of separate treatment, and they have been so various, and the problem they deal with is so important, that a historical account of them, such as Mr. Alexander here offers, cannot fail to be useful to all students of philosophy. He modestly disclaims, indeed, that his work can be called a history, because it does not exhaust the literature of the subject; but most readers, I think, will find in it all the information they will need about the origin and development of philosophic thought on this important theme.

The author begins with a brief notice of certain ideas prevalent among Greeks of the prephilosophical period, and especially prominent in the dramatic poets; namely, the idea of fate in relation to human action, and the idea of an opposition between reason and feeling. These ideas have perpetually reappeared in discussions about the will, and may be found to-day in slightly modified forms in almost every treatise on the subject. The notion of fate, indeed, has changed somewhat since the days of Æschylus and Sophocles; for the Greek fate was a power which the human will could not resist if it would. Nevertheless, the Pauline doctrine of predestination, and the philosophical doctrine of materialistic necessity, have much in common with the earlier conception; hence some notice of those earlier views forms a natural prelude to a study of the philosophical doctrines themselves. Real moral philosophy, however, began with Socrates, and Mr. Alexander, therefore, considers his own theme to begin with the doctrines of that thinker. Yet he finds some difficulty in ascertaining just what Socrates and his greatest disciple thought about the will, their investigations not having proceeded far enough to reach a definite theory. Aristotle's views, as presented in his psychology and his ethics, are much more elaborate and clear; and Mr. Alexander has done well in giving a full account of them. On this subject, as on many others, that great thinker attained a depth and clearness of view which has

hardly been improved upon since, and what he wrote upon it is still worthy of careful consideration. Yet his position with regard to the freedom of the will is hard to determine, not because he considered the question and failed to reach a definite view, but because he does not seem to have considered it all. Mr. Alexander, however, thinks that his general theory of the will leads logically to determinism. With regard to the Stoics and Epicureans there is no difficulty on this point, the determinism of the former, and the indeterminism of the latter being well known; and, as their interests were mainly ethical, they gave special attention to the problem of the will. Mr. Alexander gives a concise account of their views, and also touches briefly upon those of the Academicians and the Skeptics. It is interesting to know that the Stoic Chrysippus first advanced what is now the main argument against the 'liberty of indifference,' namely, its inconsistency with the universality of causation.

Leaving the field of Greek philosophy, the author passes to the various theories of the will that have from time to time prevailed in Christian theology, devoting to them nearly one-fourth of his book. This seems to me excessive, for though the theologians, from St. Paul downwards, have had interminable discussions about the will, they have not advanced our knowledge of the subject, as far as I can see, a single step. They have treated the will solely in relation to the divine government of the world, about which they profess to be perfectly informed, and have neglected the study of the will itself; consequently their discussions have been unfruitful. I think, therefore, that they receive too much attention in this book, and I must say the same thing of the German philosophers since Kant, none of whom have added anything important on the subject of the will to what had been said before. Mere discussion without result is of no value in philosophy except to keep the philosophical tradition alive.

Coming down to modern times, Mr. Alexander deals with the British philosophers first, giving them only one chapter, however, while he gives two to the Continental thinkers. One of the first things that modern philosophers had to do, and one of the most important, was to emancipate themselves from the influence of the church, which was adverse to freedom of thought; yet the earlier ones, such as Descartes and Hobbes, endeavored to show that their views were consistent with those of the ecclesiastical authorities. Hobbes, according to this book, was the first to discuss the will in a purely philosophical spirit, not only presenting the arguments for determinism in an able way, but giving a somewhat elaborate theory of the will itself. Leav-

ing Hobbes, the author passes in review the theories of Locke, Berkeley, Hume, and Reid, with only occasional glances at other British thinkers, and leaving all since Reid unmentioned, so that his treatment of this part of his subject is incomplete. Passing next to the Continent, he presents the views of Descartes and his successors down to Leibnitz, and those of Kant and other German thinkers as far as Lotze, closing his historical survey with the last-named writer. His reason for not treating the latest writers is that many of them have studied the will by the methods of science rather than by those of philosophy, and consequently their work requires to be dealt with separately. The evolution theory in particular has, in his opinion, almost revolutionized psychology, and he thinks it "not unreasonable to expect that the genesis of conscious volition may be explained, not only by the more rudimentary processes in the child, but also by the phenomena presented in the lower animals" (p. vii). For my part, I have no faith in evolutionism as a key to the problem of the will, or to any other problem in philosophy; but the attention lately given to the study of the will itself and its relations to other mental facts, on the one hand, and to bodily states, on the other, gives promise of good results.

Mr. Alexander tells us in his preface that this book is the first of a series dealing with the will problem, and that its object is to introduce a constructive theory of the will, on which he has been engaged for some years. He gives no intimation, however, of what his theory is, nor even of his position on the question of determinism or its opposite. Nor does he introduce any criticism in this book except in a few cases, and then chiefly for the purpose of showing more clearly the real character of the theory he is dealing with. The book is certainly a valuable addition to the philosopher's library, and its value is enhanced by the style in which it is written; a style not so strong as some, but clear and refined, and of uniform excellence throughout. Those who read the book will look with interest for the remaining volumes of the series.

JAMES B. PETERSON.

The Groundwork of Science. A Study of Epistemology. By ST. GEORGE MIVART. New York, G. P. Putnam's Sons; London, Bliss, Sands & Co., 1898.—pp. xviii, 328.

During the last twenty-five years there has been a growing interest, among scientific men, in the problems of epistemology. This is especially noticeable in England and Germany. The present work comes

from the hand of a prominent biologist. To those who are acquainted with Mr. Mivart's *Essays and Criticisms*, 1892, and his *Elements of Science*, 1894, together with the neo-scholastic literature on the theory of knowledge, the volume before us will afford little fresh interest. Yet one may say there is probably no recent work that more candidly lets one into the venerable combination of psychological with metaphysical realism, or that puts a more varied emphasis on Tongiorgi's thesis: "Truth is an equation or a conformity of thought to thing."

After an introductory chapter we have the following captions: An enumeration of the sciences, the objects of science, the methods of science, the physical antecedents of science, the psychical antecedents of science, language and science, intellectual antecedents of science, causes of scientific knowledge, the nature of the groundwork of science. A more general classification of the contents of the work is given on page 296, as the matter of science, the tools of science, and the nature of the worker in science. Mivart's main contentions in introducing the matter of science are: "We are perfectly convinced that objects and substances can, because they do, exist apart from our own mind and apart from any mind that we can have any direct knowledge of, or even imagine as existing" (p. 42); and "all science is essentially abstract although derived from and accurately applicable to real concrete states of real concrete things" (p. 7). It is held also that if idealism were true, physical science would be a dream (pp. 49–54). Realism has on its side the spontaneous judgment of mankind, the dictum of our own minds, and the results of science, while the main attraction of idealism "consists in the fact that the system is exceedingly easy of comprehension" (pp. 45–47). The matter of science is subdivided into "the physical and material, and the mental and ideal," both of which we know that we know by indubitable intellectual intuition. "Self-evidence is the necessary and only criterion of truth." Mivart sides with Hegel against Spencer, holding that we can only explain the lower by the higher. The senses, although they never deceive us, can never be a criterion of judgment (pp. 71, 278–9). Against the phenomenalists and relativists he urges: "Either this system is merely uncertain and cannot be known to be true, or else it is absolutely true and can be known so to be" (281). Although Mivart lays great stress upon "ordinary reason," and will have science nothing other than ordinary reason, yet we are told that there are no such things as space and time, that "what motion denotes cannot really exist in the concrete," and that "matter pure and simple

shows no signs of existing *in rerum natura*." More than this, Mivart will not allow either heredity or natural selection to play a rôle in developing these fundamental ideas. He is probably right in holding that they proceed under the regular formula, "heads I win, tails you lose," yet they do furnish some sort of an excuse for holding psychological realism.

The spirit of the work is more clearly understood when the author comes to consider the tools of science, the organs of sense, the ordinary reason, and the following fundamental principles which are so self-evident that "any scientific man who should deny any one of them would either deceive himself or try to deceive other people" (p. 106). These certainties are: the existence of certainty, the existence of an external world, our continuous substantial existence, the validity of the process of inference, the self-evidence of some truths, the principle of contradiction, the evidence of axioms, the principle of causation, the uniformity of nature, and the existence of necessity and contingency (pp. 106, 264, 316). These ten certainties remind us of the ten tropes of Ænesidemus. It still remains to be asked, Why should we admit the one series rather than the other? The assertion that we know that we know the one series seems to beg the question at issue. Take, for instance, the principle of the uniformity of nature, with which the principles of continuity and causation are so closely associated, it is by no means clear that the author himself has not jeopardized its scientific application by introducing so many breaks in nature. "There is an absolute break" between the organic and the inorganic world (p. 212), between chemical elements before and after synthesis (p. 283), "between everything that feels and everything devoid of sensation" (p. 287), between language of feeling and language of thought or between animals and man (p. 212); "new existences are continually arising within the world" (p. 289).

As regards the worker, he is to avoid being like the fisherman in the drama whose eulogy on his deceased lord was, "he was so fond of fish." Forsaking the bias of specialization, he must be sure of his personal identity, and confide in reason which he will find latent and implied in all the matter of science, even in the crystal. Once it is asserted that "function depends on structure," again that function and structure are interdependent, although there are not wanting indications of a deeper view that structure depends on function. Though much emphasis is put on the telic character of instinct and immanent reason (or will), the author clearly does not accept hylozoistic teleology. He is convinced, however, that no satisfactory epistemology is possible apart from the

conception of an active causative principle underlying and pervading the material cosmos.

Although the work is full of interest and suggestion, it can scarcely be regarded as a successful study of epistemology. Idealism is treated too much as a system of negatives, while realism is uncritically compounded. But epistemology is not simply an issue between idealism and realism. In any adequate view of the field, some attention should be given to the analysis of experience to show how the antithesis of the outer and the inner arises. All this and much more is excluded from consideration. Indeed we are told: "We know things and we know that we know them. How we know them is a mystery indeed, but one about which it is idle to speculate, as it is absolutely insoluble. The oft-repeated question, 'How is knowledge possible?' is, therefore, one of the most idle and futile questions which can be asked" (p. 56). "All inquiries into the origin and causes of our convictions are futile for epistemology" (p. 275). We close our too imperfect notice by a word from Lichtenberg: "*Die gemeinsten Meinungen und was jedermann für ausgemacht hält, verdiente oft am meisten untersucht zu werden.*"

MATTOON M. CURTIS.

ADELBERT COLLEGE.

Studies of Good and Evil. A Series of Essays upon Problems of Philosophy and of Life. By JOSIAH ROYCE, Professor of the History of Philosophy in Harvard University. New York, D. Appleton & Company, 1898.—pp. xvii, 384.

Professor Royce has in former books presented, in more or less detail, the arguments for philosophical idealism. In the present volume, he is mainly concerned, as he himself tells us, with the application of this doctrine to concrete and practical problems of life. Idealism "is not, as many have falsely supposed, a theory of the world founded merely upon *a priori* speculation, and developed solely in the closet. It is, and in its best historical representatives always has been, an effort to interpret the facts of life" (pp. iii, iv). By employing his idealist doctrine to throw light upon various complex problems of man's psychological and moral nature, Professor Royce not only furnishes the best test of its truth in its power of explaining facts, but this contact with actual experience seems to react upon the theory itself, and to render it more many-sided and richer, even from a speculative point of view.

The essays of which the volume is composed have the following

titles: 'The Problem of Job;' 'The Case of John Bunyan;' 'Tennyson and Pessimism;' 'The Knowledge of Good and Evil;' 'Natural Law, Ethics, and Evolution;' 'The Implications of Self-Consciousness;' 'Self-Consciousness, Social Consciousness, and Nature;' 'Originality and Consciousness;' 'Meister Eckhart;' 'An Episode of Early California Life;' 'The Squatter Riot of 1850 in Sacramento;' 'Jean Marie Guyau.' All of these, except the one on 'Meister Eckhart,' and that on 'Guyau,' which now appear for the first time, have been printed in journals during the last four or five years, and are now reissued without any material changes. The paper on 'Self-Consciousness, Social Consciousness, and Nature,' is a reprint of the author's articles in this REVIEW (Vol. IV, Nos. 5 and 6), and gives, together with the essay on 'The Implications of Consciousness,' a theoretical statement and expansion of the author's previously-published views on ultimate philosophical questions. The former paper seems to the present writer one of the most important pieces of speculation which has appeared in recent years. As, however, the readers of the REVIEW are familiar with the position there advanced, and, as it has already been discussed to some extent in this journal, we may turn to notice some of the applications which Professor Royce makes of his idealistic doctrines.

In discussing 'The Problem of Job,' the author shows by an instructive analysis of various aspects of experience that we must not be led by "the abstract meaning of the words good and evil into thinking that these two opponents exist merely as mutually exclusive facts side by side in experience." "When we go back to the fact of life, we perceive that all relatively higher good, in the trivial as well as in the more truly spiritual realm, is known only in so far as we accept as good the thwarting of an existent interest, which is thereby declared to be a relative evil, and love a tension of opposing impulses which is thereby declared to be good." To simply destroy and obliterate moral evil would be to destroy all knowledge of moral good. "What is needed, then, for the definition of a divine knowledge of a world that in its wholeness is perfect, is not a divine knowledge that shall ignore, wipe out, and utterly make naught the existence of any ill, . . . but a divine knowledge to which shall be present that love of the world as a whole which is fulfilled in the endurance of physical ill, in the subordination of moral ill, . . . and in the discovery that the endless tension of the finite world is included in the contemplative consciousness of the repose and harmony of eternity. To view God's nature thus is to view Him as the whole idealistic theory views Him, not as

the Infinite One beyond the finite imperfections, but as the being whose unity determines the very constitution, the lack, the tension, and relative disharmony of the finite world" (pp. 24, 25). Moreover, Job's difficulty came from the thought that God is a far-off sovereign, and that for his pleasure man has to suffer. But Idealism, which regards God as the complete Self within whose experience all things fall, and in which alone they have meaning and reality, teaches that God suffers and sympathizes with us. But we cannot say that God wills evil. The function of evil in the Divine life, as in that of the finite individual, is to be endlessly triumphed over and suppressed (p. 28).

The essay on 'The Knowledge of Good and Evil' (pp. 89–122), is directed against an article by Dr. Georg Simmel, of Berlin, which appeared in the *International Journal of Ethics* (Vol. IV, pp. 48–80), in which the author attempted to show that moral deficiencies, to a certain degree at least, favor intellectual development. Against this view Professor Royce argues that morality does not consist in simple innocence, that moral life, as well as physical and intellectual life is a unity of opposites. In all moral excellence there are always present tendencies which *if they were alone* would be the very destruction of any such excellence. "And this must be the case, not because of the weakness of man, but because of the organic dignity and consequent complexity of virtue; and not because the moral world is a mere maze of perplexing confusions, but because the very principles of every organic life is the combination in harmony of opposing tendencies" (p. 98). Virtue then is the choice of the good and the consequent inhibition of opposing tendencies. And "the chances are largely in favor of the greater knowledge of the virtuous chooser, since in general strong temptations are comparatively elemental, while the reasons in favor of goodness are in nature usually complex and abstract" (p. 103). Nor does moral progress, the formation of virtuous habits, involve a loss of knowledge, but progress here is exactly parallel to progress in the intellectual field. But it may be said that it is only from an experience of comparative immorality that one can understand the elemental passions of the soul. To this the answer is that such an experience in itself is not a sin. The fault of a man is not that he has elementary passions, but that he does not order and subordinate them. Moreover, one does not better understand these passions because one has yielded to their chaotic rule. The moralist should be a man of experience in a wide range of elementary life. But this does not imply that he should be a sinner in order to be wise (p. 116).

It will be noticed that Professor Royce solves the paradox which

Dr. Simmel has advanced by insisting that 'good' and 'evil' are not mere verbal opposites, but are constituted by the relations of concrete impulses and tendencies; and this concrete tendency which refuses to rest in abstract opposites, characterizes all his discussions. Indeed, throughout the whole book, a reader cannot but be impressed with the wealth of the author's empirical knowledge, his eye for the facts, as well as by the skillful use which he makes of analogy and generalization in interpreting facts from the point of view of idealism. The style, as in Professor Royce's earlier works, is often provokingly diffuse, but there are fewer carefully prepared paradoxes than in some of his former writings, and the discussions perhaps gain as a consequence in seriousness of tone, without losing at all in logical clearness and acumen.

J. E. CREIGHTON.

SUMMARIES OF ARTICLES.

[ABBREVIATIONS.—*Am. J. Ps.* = *American Journal of Psychology*; *Ar. f. G. Ph.* = *Archiv für Geschichte der Philosophie*; *Int. J. E.* = *International Journal of Ethics*; *Phil. Stud.* = *Philosophische Studien*; *Rev. Ph.* = *Revue Philosophique*; *R. I. d. Fil.* = *Rivista Italiana di Filosofia*; *V. f. w. Ph.* = *Vierteljahrschrift für wissenschaftliche Philosophie*; *Z. f. Ph.* = *Zeitschrift für Philosophie und philosophische Kritik*; *Z. f. Ps. u. Phys. d. Sinn.* = *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*; *Phil. Jahr.* = *Philosophisches Jahrbuch*; *Rev. de Mét.* = *Revue de Métaphysique et de Morale*; *Ar. f. sys. Ph.* = *Archiv für systematische Philosophie*.—Other titles are self-explanatory.]

LOGICAL AND METAPHYSICAL.

The One and the Many. D. G. RITCHIE. Mind, Vol. VII, No. 28, pp. 449–476.

In all times and in all places 'The One and the Many' is the last and greatest problem of abstract thought. Such a problem, therefore, must be common to logic, metaphysics, theology, and ethics. (1) The Logical Problem. What is the general concept? Is it but a name? Then how can we distinguish real things? Is it true only for thought? Then how can we distinguish truth from falsehood? Every judgment, every reference, even every crudest thought implies 'a one' as well as 'a many.' Thus does logic raise the question and metaphysics must answer it. (2) The Metaphysical Problem. Professor James, in his *Essays in Popular Philosophy*, makes three propositions: (*a*) that monism resolves real facts into illusions; (*b*) that philosophy is bound to satisfy other demands of our nature than those of reason; (*c*) that, in order to explain that free will which is presupposed in our moral judgments, we must posit a real objective contingency in the universe. The first of these is true, only if the world of reality exclude the world of appearance. But this is not so. Appearance and reality imply each other. Appearance is *partial comprehension*, reality *complete comprehension*. And metaphysics is but an unusually persistent attempt to completely comprehend the universe, to think it as one coherent whole, and as such she can hold no brief with 'Popular Philosophy' and philosophical sharp-shooting. Moreover, true idealism, which seeks to comprehend the world as a whole, refutes Professor James's second and third proposition as well as his first, since it satisfies not only the demands of reason but every possible demand of our nature, and shows that objective necessity is not only *not incompatible with*, but is absolutely *essential to* individual freedom. (3) The Theological and Ethical Problem. The independent reality and freedom of each individual soul is incompatible with monism. Thus is the society of

the universe an anarchical aggregate of individuals. Such is the view which Professor James sees fit to champion. But here again our Idealism is triumphant over him. The isolated independent individual is unthinkable. The society of the universe is a system, an organism. The truth is the whole, and God is truth, *id quo nihil majus cogitari potest.*

IRA MACKAY.

Philosophy and the Newer Sociology. WILLIAM CALDWELL. Contemporary Review, September, 1898, pp. 411–425.

The relation between philosophy and sociology is one of the important questions of the time. Philosophers are giving attention to the theory of society and to questions of social reform, while sociologists are beginning to proclaim that their science is a new philosophy. The two disciplines meet especially in ethics, which is acknowledged to be both philosophical and sociological. The scientific treatment of society is in part the outcome of the social philosophies of men like Plato, Hobbes, Rousseau, and others; and, moreover, sociology is now recognized as a psychological science, and psychology is in its origin a branch of philosophy. It is obvious that our theory of society must be determined in part by our theory of the universe; while on the other hand, if humanity is the highest outcome of the universe, the nature of reality may be best studied in human life and society. Moreover, social reform ought to be based on a sound philosophy of life. Philosophers are called upon to introduce system and order into social life, to organize the actions of man as well as his thoughts ; and recent philosophical literature indicates that they are coming to recognize this fact. No one unacquainted with philosophy and psychology is competent to frame a true theory of life ; indeed, a complete sociology must be a philosophy, while a complete philosophy must include a theory of society. By the study of society, too, philosophers can emancipate themselves from the mere cosmology, the mere subjective idealism, and the mere dialectic, that have so often been deemed the essence of philosophy. If sociology is pursued in this spirit and by philosophical methods, then out of the social studies of the present day will come a new idealism and a realm of moral truth that will, on the one hand, overturn the naturalism and the sensualism of the hour, and on the other give new life to speculative philosophy itself.

JAMES B. PETERSON.

Le principe général de la classification des sciences. NAVILLE. *Ar. f. sys. Ph.*, IV, 3, pp. 364–381.

The author divides the sciences into three classes. (1) The theorematic sciences answer the question, What is possible? They have to do with laws or the conditionally possible and necessary relations. They comprise arithmetic, biology, etc. (2) The historical sciences answer the question, What is real? The divisions here are purely chronological, and include such disciplines as astronomy, botany, and the history of humanity from

different points of view. (3) The canonic sciences answer the question, What is good? They include the sciences of the rules of human activity in view of the realization of a possible improvement, *i. e.*, morality proper, theories of the cognitive, pleasure-giving, and useful arts, and moral sciences.

GRACE NEAL DOLSON.

Truth and History. J. B. BAILLIE. Mind, Vol. VII, No. 28, pp. 506–522.

One of the most striking phenomena in modern thoughts is the mutual complacency with which the adherents of the historical method, on the one hand, and the adherents of the metaphysical method, on the other hand, regard each other. The province of the first is the series of events in time, as series. The province of the second is the eternal truth and reality which underlie that series. Each regards the province of the other as being quite legitimate, but, at the same time, as being absolutely distinct and separate from his own. This attitude, however, cannot be final, since the conclusions arrived at are absolutely contradictory of each other. The conclusion of the historical method is that *becoming* alone is, the conclusion of the metaphysical that *being* alone is. How can we overcome this contradiction? The most obvious way is by dropping time out of account altogether, and viewing events no longer from the standpoint of continuous time, but from the standpoint of an eternal present. And this can be done with impunity, since time is independent of and is not an attribute of the events which are in it. The events and their reality remain the same in both cases. Thus are becoming and being reconciled and unified. Several important results flow from this conception: (1) time is neither reality nor attribute of reality; (2) man is an eternal being, since he is no longer in anywise swamped in the processes of his own existence; (3) eternity is not at the end of time, but is immanent in all time; (4) our popular views of progress must be modified. Progress can no longer be a *vis a fronte*, determining all events in time towards "one far off divine event." The one event is not far off, but is here and now, immanent in every event of creation's history.

IRA MACKAY.

Sur les rapports du nombre et de la grandeur. L. COUTURAT. Rev. de Mét., No. 4, pp. 422–447.

The writer gives a *résumé* and discussion of an article by Bertrand Russell "Essai sur les fondements de la géométrie" (*Revue de métaphysique*, Mai, 1898). Mr. Russell, starting out with the problem of the generalization of number, becomes involved in the discussion as to whether or not quantity is an intrinsic property of things. If so, he argues, one of two hypotheses must be adopted: (1) that quantity is an independent category; (2) that it is given immediately in sense. Both hypotheses he finds to be untenable. Quantity is relative, its essence is in measure. If intelligence

were adequate to sensibility, it would distinguish things by qualitative rather than by quantitative differences. The writer maintains that the relativity of quantity is fallaciously interpreted by Mr. Russell, and adopts the view that quantity is an intrinsic property of things. The latter part of the article is devoted to a discussion of the philosophy of mathematics, with the purpose of proving that mathematics cannot be based upon the idea of number alone. To number must be added the ideas of order and of quantity. Indeed, it is probable that the ideas of number and of order may be reduced to that of quantity, which appears in every case to furnish them matter and support.

VIDA F. MOORE.

De quelques préjugés contre la philosophie. L. BRUNSCHVICG. Rev. de Mét., No. 4, pp. 401–421.

The purpose of this article is to examine the claims of the philosophy of sentiment and the philosophy of will to primacy over the rationalistic philosophy. The proposition of Spinoza, according to which the idea has, as it were, an independent existence, preceding emotion and volition, which presuppose it and depend upon it, is taken as the formula of the rationalistic philosophy. Examination of the work of modern thinkers reveals the fact that the philosophy of sentiment and the philosophy of will invoke no immediate and simple experience which may dispense with all determination and analysis. On the contrary, that which professes to surpass reason must, nevertheless, be conceived by reason. Benevolence and duty are not created by reason, if you will, but they must be conceived by reason, and their relation to other ideas determined by reason. But may not the primacy of feeling and of will signify, if not the exclusion, yet the subordination of intelligence? Not so, the writer asserts. In any case, we are brought back finally to the philosophy of reason. The rationalistic philosophy, however, does not disparage the *rôle* of feeling or of will. There can be no conflict between intelligence on the one side, and feeling and will on the other. By virtue of feeling man desires an object; by virtue of will he pursues an end. But to set at naught reason, by which he knows this object and this end, is to cut at the roots the life of emotion and the development of the will.

VIDA F. MOORE.

Belligerent Discussion and Truth-seeking. RICHARD C. CABOT. Int. J. E., IX, pp. 29–53.

Philosophical discussion is now thought to be unprofitable, but discussion in other departments of thought is not unprofitable, and perhaps it would not be so in philosophy if properly conducted. In discussion the best way to prove a point is to give examples to illustrate it. "In progressive and convincing discussions all dissent from another's views takes the form of an attempt to reinterpret, in a way more comprehensive than his, the com-

mon experience which is under consideration." Discussion which implies that the opponent's views are wholly false or meaningless is useless. Each debater may be right from his point of view; hence to refute our opponent we must try to see the matter under discussion from his standpoint. We must have complete understanding of his doctrine, and also feel the full force of the objections to our own doctrine; otherwise we have no right to enter the discussion. There are important views of life that cannot be understood without some knowledge of the life history of him who holds them; if we can thus learn the conditions under which a certain false belief was formed, we shall be better able to understand and refute it. But the task of mutual comprehension is not an easy one. We are often hostile to an idea merely because we do not understand it, or because we think it mischievous, and sometimes because, it being antagonistic to our own view, it seems to cast an imputation on our intelligence. We ought to be careful to state our opponent's views in terms that he would himself accept, so as to avoid all danger of misrepresentation or misunderstanding, and also eschew such epithets as 'mere,' 'bare,' 'dead,' 'brute,' etc., in characterizing his opinions. And we ought always to remember that the real object in discussion is, or should be, to get at the meaning and truth in another person's interpretation of our common experience. Discussion conducted on these lines and in accordance with rules cannot fail to be useful.

JAMES B. PETERSON.

PSYCHOLOGICAL.

Die Begriffe der Seele und der psychischen Energie in der Psychologie. NICHOLAUS VON GROT. *Ar. f. sys. Ph.*, IV, 3, pp. 257–335.

The scientific theories of Darwin ushered in a new era of thought, which is no less characteristic than those known as the ancient, mediæval, and modern. It began with the theory of the infinity and homogeneity of the world process in time. One of the most important questions arising from this point of view, is presented in the attempt to bring psychology into the general scientific scheme, and to show that psychical processes are subject to the law of the conservation of energy. Upon the answer to this question the whole future of psychology is dependent. Reciprocal action between consciousness and the physical environment is generally recognized as a fact; the prevalent theory with regard to it takes the form of parallelism. The only safe ground for a scientific solution of the nature of this interaction is furnished by the theory that regards energy, rather than the material atoms, as the physical unit. Investigation yields the following results: (1) The concept of psychical energy is as justifiable as that of physical energy, and in the same way presents quantitative measures and different forms; (2) In the human organism there is a continual transformation of physical into psychical energy and *vice versa*; (3) The psychical ener-

gies are continually passing from the potential conditions into the kinetic, and from the kinetic into the potential ; (4) Although no exact measures for psychical energy have yet been discovered, there are no logical nor factual grounds for denying the applicability of the universal law of the conservation of energy to the psychical process. It must not be supposed that these conclusions lead to materialism. They are also compatible with an idealistic metaphysics. In fact, the entire theory in itself decides no metaphysical, ethical, or religious questions ; it merely enables us to regard these from a different point of view.

GRACE NEAL DOLSON.

Feeling and Thought. ALEXANDER F. SHAND. Mind, Vol. VII, No. 28, pp. 477–505.

Feeling is about the most ambiguous term in the whole psychological vocabulary. In a history of psychology it would, in fact, be synonymous and coextensive with 'immediate experience,' and as such is antithetical to thought, as the passive is antithetical to the active. What then is the nature of feeling ? In contrast to thought it has three main characteristics : (1) it is subjective, "involves no objective reference;" (2) it is the subject matter upon which thought operates; (3) it is a 'continuum' of 'continua.' The third of these contains the crux. If feeling be a 'continuum,' then it is not the 'discrete manifold' which Kant chimerically supposed it to be. The content of each 'now' of immediate experience is not, therefore, confined to a mathematical point, but contains a wealth of related items. Thus we have no longer any need of thought as the creator of experience, but only as its witness, and even this witnessing is itself a part of the feeling continuum. Thus is thought subordinated to feeling and the Kantian dualism overcome.

IRA MACKAY.

Das Bewusstsein des Wollens. A. PFÄNDER. Z. f. Ps. u. Phys. d. Sinn., XVII, 5' pp. 321–367.

This paper is a critical examination of the views held by Münsterberg and James regarding the consciousness of voluntary activity, to which are added short accounts of the theories of Külpe, Ribot, Baldwin, and Lipps, the main arguments being given in the criticism of the first two. Münsterberg postulates from the beginning that will must be sought among sensations. Its most important criterion is that the idea of the end to be attained always precedes the attainment. Will is compounded of an idea-series of a certain kind and *Innervations-gefühle*, but the latter are ultimately reduced to memory reproductions of former peripherally conditioned movement sensations. That is, the will is an idea of an effect, followed by the perception of that effect. His completed thesis is that the will as conscious process consists only of a particular grouping of sensations (or ideas). Voluntary acts are not always accompanied by

the feeling of activity, or effort, and, when present, this feeling is added after the motion-sensation has been willed and the end attained. Against this view of the will, it is to be noted: (1) That involuntary movements may be foreseen before their execution, and we thus have a memory reproduction of movement-sensation, and the end to be attained; yet the feeling of activity is absent, and we do not say that we have willed the movements. (2) That a mere idea succeeded by the corresponding sense impression does not constitute an act or a feeling of will. (3) That we do not wait until we have reached the end of our action in order to feel ourselves active. (4) That there is willing which never attains its end; yet we are bound to consider as true willing all cases which, from the unfavorableness of circumstances, of 'fate,' or the interference of others, fail of fulfilment. The process remains equally valid as willing, whether it is concluded with the perception of the attained, the incomplete, or the unattained effect. Every general determination remains incomplete, according to which the will is nothing more than a succession of the idea of an effect and the perception of the effect which occurs through a willed bodily movement. James's view is stated as the relation between our ego and our own conscious conditions. The essential act of will consists in directing the attention upon the idea of the end to be attained, and holding this idea fast. There is an unanalyzable element which is called 'Fiat of Will.' Willing is invariably accompanied by a feeling of effort or strain, and this consists in bodily sensations (minimal reflexes, organic sensations, etc.). He sums up his position by saying that our entire feeling of intellectual activity is in reality a consciousness of bodily processes whose true nature most people overlook. It appears as though James identifies the feeling of activity with the sensations arising from voluntary movements, in which case we ought to have a feeling of effort in all conscious movements, whether voluntary or produced by outside agency; but we do not. And, further, we ought to find that the *intensity* of the feeling of effort runs parallel with the intensity of organic sensations; but this is not the case. In fact, the more intense the 'effort of willing,' the more other sensations, and particularly those which are habitually feeble and uninteresting, tend to fade and disappear from consciousness. Therefore effort-feelings, movement, and organic sensations cannot be identical. Stating James's view in other terms, the identification of the feeling of effort with bodily sensations may be looked upon as a fusion-product of sensations, in the same sense as a clang is a fusion-product of objectively separate simultaneous tones. But, first, it is not clear how a fusion-product can be present while no attention is bestowed upon the component sensations; and, second, this is altogether different from other known fusion-products (1) in that their components disappear and a new element arises, (2) in that the withdrawal of one or other component of a fusion qualitatively alters the product, while the effort-feeling remains constant in spite of the changes or the variety of organic sensations, and, in addition, does not occur at all when those same sensations are produced

by an external agency, (3) in that other fusions are referred to an outer world, have spatial qualities, and are localized in a particular place in the body, while the feeling of effort is subjective, lacks spatial qualities, and is unlocalized. Further, to say that the will-feeling is the *total-effect* of all present psychic states is no more explanatory than would be the statement that the cause of a particular chemical reaction lies in the precise world-condition. The author concludes that all attempts to deduce the feeling of voluntary activity or effort from bodily sensations must necessarily fail, because the feeling of effort is not comparable with ideas and sensations, but is a particular conscious content and must be acknowledged as such.

MARION HAMILTON CARTER.

Short Studies in Memory and in Association from the Wellesley College Laboratory. MARY WHITON CALKINS. Psych. Rev., V, 5, pp. 451–462.

I. "A Study of Immediate and of Delayed Recal of the Concrete and of the Verbal." The thesis is that the concrete is much more readily memorized than the verbal. In this study, the verbal was divided into the written and the spoken word; the concrete was the picture of the object. The written words and the objects were projected by an oxy-hydrogen lantern upon a screen. Results for the same experiment were reported by Mr. E. A. Kirkpatrick in the *Psychological Review*, Vol. I, p. 602. The experiment was repeated in the Wellesley Laboratory to confirm the former report, and to perform the experiment under more even conditions. A list of ten words was pronounced, another list of ten words and also ten pictures were projected upon the screen. The words were then written from memory, and classified into delayed and immediate recal. The lists were so short that most of the words and the objects were recalled immediately. The first of the series was remembered most clearly, the middle of it least clearly. The last of the series was not remembered as well as one would expect. In general the conclusions of Mr. Kirkpatrick were verified: *i. e.*, memory is least good for words heard, better for words seen, and best for concrete objects. II. "The Tendency to Mental Combinations." The tendency to association is studied with reference to words heard, words seen, and pictures of objects seen. Series of ten words or objects are selected which seem to have little natural combination, yet the tendency is found to force the parts of the series into some sort of relation. This mental habit of grouping experiences into a complex image or reasoned conclusion, is a mark of intellectual capacity. The effective thinker is the one who possesses discrimination keen enough to bring together apparently unrelated elements and unite them into vital compounds. III. "Associations with Childhood Experience." Are such associations universal characteristics, or individual peculiarities, or habits of mental life? Fifteen words chosen expressly to invite childhood associations were presented to 90 Wellesley

students and to 87 persons in middle life. Francis Galton (*Human Faculty*, pp. 195, *seq.*) had found the per cent. of childhood associations more frequent than recent associations. The result of this study as compared with that of Francis Galton is as follows:

Records of	Number of Subjects.	Number of Assoc.	Childhood Assoc.	Recent Assoc.
Galton	1	124	39 per cent.	15 per cent.
Wellesley Students .	90	1127	14.7 "	32.7 "
Old and Middle-aged	87	1226	33.4 "	30.9 "

"Evidently the grasp of the recent is heavy upon the conscious life of most of us, and deviations from this type of association are due to individual caprice."

FLORENCE MACLEAN WINGER.

Dendro-Psychoses. J. D. QUANTZ. Am. J. Ps., IX, IV, pp. 449–506.

To trace one of the ultimate relations between mind and its environment backward toward its source is the attempt of this paper. The influence of trees on the life of man is the topic. Why have trees played such an enormous part in the emotional and spiritual life of the race? Why do primitive peoples still worship trees and believe them to be powerful spirits, or the abodes of spirits, which rule the destinies of men? Why have the shrines of early religions been consecrated groves? Why were "the groves God's first temples," and the garden of Eden a plantation of trees? The author's view is that 'dendro-psychoses' represent 'psychic reverberations,' of a long-past tree-living age of humanity, and that the love of trees should be fostered in children.

MARION HAMILTON CARTER.

The Dynamogenic Factors in Pacemaking and Competition. NORMAN TRIPLETT. Am. J. Ps., IX, IV, pp. 507–523.

From the official records of bicycle racing to the close of 1897, the racing times of paced and unpaced races were collated. The value of a pace is shown to be from 20 to 34 seconds in the mile. The theories accounting for this gain are the Suction Theory, Shelter Theory, Encouragement Theory, Brain-worry Theory, Theory of Hypnotic Suggestion, and Automatic Theory. The author performed a series of experiments, largely with children, to ascertain the results due to the stimulus of competition. A reel turned when alone, and while 'racing' with another child furnished the figures for comparison. The results showed three classes of children (1) those stimulated by competition to make faster time, (2) those inhibited in their motions, (3) those little affected by the competition. The author concludes that the bodily presence of another contestant participating simultaneously in the race serves to liberate latent energy not ordinarily available. The sight of the movements of the pacemakers or leading competitors,

and the idea of higher speed, are probably in themselves dynamogenic factors of some consequence.

MARION HAMILTON CARTER.

Music Imagery: A Confession of Experience. ROBERT MACDOUGAL. Psych. Rev., V, 5, pp. 463–476.

Music is not an intellectual instrument; it has not definite characters to mean certain things, like language. It produces moods rather than gives rise to a concept. It produces these moods largely by association, by composition, and by a diffused tone of feeling. The writer, who is not ordinarily a strong visualizer, but who was at the particular time in question in a happy mood and slightly excited, describes in this article a series of visions which occurred to him while listening to Schubert's Quartette in D minor. At first glance, the mixture of sylvan lakes, dancing monks, school boys, and satyrs seems weird and irrational; but in reality it is a complex association, whose connection with actual experience can easily be traced by the writer, and some figures definitely located. They were images, whose recency, or vividness, or superior fitness as symbols rendered them momentarily the most easily excited. While the memory of some of the visions is still clear to the writer, the memory of the music is lost.

FLORENCE MACLEAN WINGER.

On the Experimental Investigation of Memory. FRANCIS KENNEDY. Psych. Rev., V, 5, pp. 477–499.

This paper is a critical survey of experimental research on memory, with a complete bibliography, and a discussion of the more important results of research. An important criticism of the work done by various investigators is the general ignorance of what others have accomplished. There is a waste of work: the same ground is gone over several times with no new harvest. The questions of memory are discussed under the three heads, Methods, Material, Problems. In general, the methods are those of experimental psychology, the method of right and wrong cases being used the most frequently. Methods peculiar to this sphere of memory are those of (1) reproduction, (2) identification, (3) selection. The two latter methods are subdivisions of recognition. The method of identification is, in general, the best. Reproduction is best adapted to the study of verbal memory. Selection is the most uncertain method, because the stimuli must be given simultaneously, and the law of contrast affects each member of the series. By 'material' is meant the stimuli used in experiment. The stimuli may be (1) simple, or (2) complex. Simple stimuli are odor, time, pressure, pitch of sound, intensity of light or sound. Complex stimuli are sentences, words, syllables, letters, numbers, concrete objects. The two great problems of memory are to discover the conditions of the reception of an object into consciousness, and to ascertain the trans-

formation of the memory image in time. The depth of an impression is influenced by (1) attention and repetition, and by (2) rhythm and the general character of the object. Then, if the only variable term in the experiment is the condition governing the reception of the object, the depth may be measured in terms of transformation. The transformation itself may be measured by (1) the fading of the image, (2) the quantitative changes, and (3) the qualitative changes in the memory image. Individual factors of age, sex, race, and health condition the reception and the retention of the object to be remembered. Not the least important part of the sketch is the bibliography of works on the experimental treatment of memory.

FLORENCE MACLEAN WINGER.

Zur Psychologie der Zeitanschauung. F. SCHUMANN. Z. f. Ps. u. Phys. d. Sinn., XVII, 1 u. 2, pp. 106–149.

This article is prefaced by a statement of the theory of time-perception held by G. E. Müller. As from the particular modifications of tones we may, through comparison, rise to the generic conceptions of pitch, intensity, and timbre, so from their particular durations may be derived the wider conception of duration in general. In an analogous manner, by observing first the particular time-relations in any given collective whole, and then comparing them with those of other collective wholes, the notion of an all-inclusive time-whole was obtained. Time-perception, therefore, does not imply a higher mental activity essentially different from the sensations and mental images of the events transpiring in time. This theory the writer commends, because it contains only the simplest assumptions. To apply it in detail, however, seems for various reasons impossible as yet, and so a closer application is attempted only in a few particulars. In comparing two sound intensities, the complex of the two sensations forms a whole, and as a whole it cal s forth the judgment. The latter is determined purely by the relation of the individual intensities ; no new psychical element, therefore, is required for its explanation. In the case of a tone of uniformly increasing intensity, the judgment is called forth in a similar manner. The assertion that, in order to judge of a complex of sensations, all its elements must be present in consciousness, is made necessary by the supposition that judgments are a fundamental order of psychical phenomena, and that they *include* the elements judged. But the supposition is not necessitated by the facts, and, besides, it involves difficulties on the psycho-physical side. It suffices to assume an after-effect of the preceding sensation upon the succeeding. To form a whole does not mean simultaneity in consciousness, but, primarily, to operate as a whole, to influence as a whole the reproduction of representations, the judgments, and the feelings. All this may be directly applied to time. We judge a tone as of a certain length, because with the given length the tone as a whole has an effect peculiar to itself. The *Gestaltqualitäten* of v. Ehrenfels, which assume that a new element of representation is added to the sensations subjected to judgment, are in no particular supported with

adequate proof. All the facts can be explained equally well without them. The 'mathematical point' is to be avoided in discussions on time, for it is a limit that can never be fully reached in experience.

BOYD BODE.

Darwin's Idea of Mental Development. MARION HAMILTON CARTER. Am. J. Ps., IX, IV, pp. 535–559.

This paper aims to set forth Darwin's ideas on the relation of brain and mind, and to answer the question: What evolves in 'mental evolution' —mind, body, or both mind and body? If mind only, how can it influence organic evolution? If body only, how does its evolution carry with it the evolution of mind? If both, what is the course of mental evolution? Darwin held the relation between mind and body to be one of interaction and interdependence; and that mental development is a progressive differentiation, accompanied by, and causally interrelated with, the development of the body. Cartesianism is a statement of what may be called the static relationship of mind and body; it endeavors to account for a particular mind and a particular body at a particular time. Upon this foundation Darwin built a new structure. He saw that living beings were not only maintaining their individual interactions of brain and mind, but that their interactions were changing and progressing—progressing in a definite direction, moving onward, under the laws of inheritance, from the lower to the higher, from the simpler to the more complex. To the facts of a given moment he added the facts of a period of time; to the laws governing the individual, the laws governing the species; and to the concept of the mere existence of a living being, the concept of the development of that being, and the evolution of the series of which it forms, by inheritance, a causally related link. Darwin's philosophical position may thus be summed up in true words as *Cartesianism plus Evolution.*

THE AUTHOR.

ETHICAL.

The Relation of Knowledge to Will and Conduct. JAMES SETH. The Fourth Year Book of the National Herbart Society, 1898, pp. 7–25.

The older view of education as exclusively intellectual is giving place to a view which conceives it as chiefly ethical. To this change two main causes have contributed: (1) the growing tendency to substitute society for the individual as the educational unit, and (2) the new insight, which a more scientific psychology has provided, into the unity and continuity of the mental life. The social estimate of education is based upon the social efficiency of the individual, and regards, not what a man knows, but only what he does and what he is. Psychology, moreover, has taught us that, as the individual life cannot be separated from the larger life of society, so the intellectual powers and their functions are not duly appreciated, so long as they are separated from the 'active powers.' Thus we have learned

to subordinate the intellectual to the practical, and to take life itself as the measure of knowledge. The present paper attempts to indicate both the truth and error of this social, practical, utilitarian, or 'ethical' estimate of knowledge, and to show that the ethical function of knowledge is not exhausted by its practical application, but includes also its pursuit as an end-in-itself. In our escape from the one extreme of a scholastic and academic intellectualism, we are in danger of falling into the hardly less pernicious extreme of a practical and utilitarian Philistinism. That all knowledge does have a practical utility and social value is indubitable. To separate knowledge from life, intellection from volition, is to abstract a part from the whole, and to attribute to the part, in and for itself, a value which it possesses only in its indissoluble relation to the whole. Intellect exists for the sake of will, and the value of knowledge depends upon the character of the will that uses it. Although the scientific mind is apt to reach the opposite conclusion, such a psychological analysis would seem to coincide with the practical instinct in human nature. The ordinary man recognizes no value in knowledge or education save as an instrument of activity. This is *our* 'common sense,' but it has not always been, and it is not now everywhere, the common sense of mankind. To the Greek preëminently, knowledge seemed to have an intrinsic value, to be even the supreme end-in-itself. The ethical inadequacy of intellectualism is strikingly illustrated in the rationalistic ethics of Kant. Kant's effort to give reason a practical significance without allowing the practical significance of any activity other than the activity of reason itself, is a conspicuous failure. The solidarity of the various elements in the total life of the self forbids any such separation between intellection and action. The practical significance of knowledge is limited only by the possibilities of knowledge itself. The life and education of the intellect is at the same time the life and education of the will. But, after thus admitting and emphasizing the ethical function of knowledge, we must still ask whether this is its only function. Such an exclusive assertion of the practical function of knowledge as negates its theoretical value, invalidates knowledge by reducing it to the level of mere opinion. In the larger whole of which it forms a part, knowledge has not a merely instrumental value. It is not merely a means to an end beyond itself, it is also an integral part of the end. To assign to it an exclusively instrumental and subjective value is to negate the essential idea of knowledge, and the logical issue of such a view is skepticism. The skeptical reduction of knowledge to opinion has always been the result of the temporary predominance of the practical over the theoretical interest. Further, if knowledge has a merely practical value, it inevitably loses even that value. What is theoretically uncertain cannot become practically certain, and intellectual agnosticism cannot become the foundation of moral faith. When we interrogate the intellect itself, as we find it in the consciousness of the scientist and the philosopher, its invariable answer is that knowledge, as such, has ontological significance, and that its characteristic

interest and value lie in the attainment of its own inherent purpose, the apprehension of truth and reality. The intellectual interest proper is an interest in the object itself; not in its uses for the will of the subject any more than in its affective value. Doubtless all knowledge is teleological, but its teleology is the immanent teleology of the intellect itself. If the world of science arises in response to our desires, it is not in response to our practical, but to our intellectual desires. As the only way to secure the advantage of morality is to lose sight of the advantage, so the only way to secure the practical advantage of knowledge is to pursue knowledge for its own sake. The intellectual life is no less 'paradoxical' than the moral life. Further, the recognition of the intrinsic value of knowledge secures to it an ethical significance otherwise impossible, a significance which is social as well as individual in its scope. Finally, the answer to the question, whether virtue can be taught, depends on our answer to the question, whether, and in what sense, 'virtue is knowledge.' A merely abstract knowledge, or a purely intellectual apprehension, has no influence on the will, and, therefore, affords no security for virtuous character or conduct. The knowledge which has practical significance is concrete, individual, and 'touched with emotion,' or affective tone. If morality is the expression of 'right reason,' then the awakening of reflection about the rational significance of action can hardly fail of its ethical consequences.

ALBERT LEFEVRE.

Social and Individual Evolution. HENRY JONES. The New World, September, 1898, pp. 453–470.

The nature of the individual is essentially social; a man's relations to his fellows are not *addenda* to his personality, but the inmost content and reality of it. Antagonism between the individual and society arises only from their imperfection. Society is an external necessity to the individual, because the latter is not sufficiently intelligent to grasp its meaning, or not sufficiently good to adopt its ends; and society on its part is a mechanical and most imperfect whole only because its members are but partly rationalized. The converse of this truth is that society is essentially individual. This does not mean that society, in approaching its ideal, becomes more like a physical organism in having one brain or one center of self-conscious activity. Society is a hyper-organism; it shows a tendency to be *all* in *every* part in a way to which the physical organism furnishes no adequate parallel. The principle of the essential coincidence of individual and social welfare implies that every particular good has its own place and meaning in a scheme of universal good. It means that there is a moral cosmos, and is thus the necessary hypothesis within which ethics moves. It occupies in the moral sphere a place analogous to the conception of the uniformity of nature in the sphere of knowledge. The distinction between public and private good is thus in the moral sphere entirely false. It is a necessary consequence of the principle on which

morality rests that social evolution means individual evolution, and *vice versa*. While every one admits that man is essentially social in his nature, the contest between Socialists and Individualists proves that the ultimate consequences of this view have not been fully realized. This is due to the fact that the relation of society to its members is interpreted by means of mechanical metaphors. Both Socialists and Individualists agree in thinking that the recent development of social functions has carried with it restraint upon the members of society. They differ only in the way in which they view this alleged limitation of the individual's powers. It seems almost too obvious for debate that the more the state undertakes, the less remains to be done by the individual. But this assumes that individual liberty and communal action are antagonistic. Such a mechanical relation between society and its members, however, is disproved by the facts. An oligarchic or monarchic despotism, which assumes every function to the *exclusion* of the individual, always has the most limited functions. Though it claims to do all, it can really do very little. To do more, it must make room for the individual and call forth his powers. And, on the other hand, an individual rich in the resources of will and intelligence will himself be powerless if he finds himself a member of a crude and unorganized state. The true view is that social and individual evolution are concomitant, and this means that as civilization advances the functions of society and those of its members are simultaneously enlarged. Every addition to the communal powers is capable of being, and generally is, a direct enlargement of the individual's capacity to fulfil his legitimate desires. If individual and social ends come into collision, the conflict arises because either the individual or the society has blundered, and sought an end which is illegitimate even from its own point of view.

DAVID IRONS.

NOTICES OF NEW BOOKS.

The Problems of Philosophy. An Introduction to the Study of Philosophy. By JOHN GRIER HIBBEN, Ph.D., Stuart Professor of Logic in Princeton University. New York, Charles Scribner's Sons, 1898.—pp. vi, 203.

The aim of this work is "to give a simple statement of the various schools of philosophy, with the salient features of their teachings, and to indicate the chief points at issue in reference to controverted questions." The author has not attempted "to present a detailed account or exhaustive criticism of philosophical systems;" his object has been "merely to furnish the student who is beginning the study of philosophy a bird's-eye view of the general philosophical territory." Professor Hibben keeps strictly within the limits he has laid down, and has succeeded in writing an introduction to philosophy which is better adapted to the needs of the beginner than any similar work now in the field. He gives a simple, intelligible, and precise account of the problems of philosophy, and of the various solutions which have been offered. He never obtrudes his own point of view, and always presents the reader with a sympathetic and objective statement of the theory under discussion. Another important feature of the book is its size. The author has evidently realized that an introduction should be brief, and he has attained this end by shunning prolixity of statement and superfluous repetition. Moreover, his book has all the attraction which an excellent literary style can lend, and for this reason, among others, it ought to appeal not merely to the professed students of philosophy, but also to a wider circle of readers.

After showing that the problems of philosophy necessarily present themselves to the human mind, Professor Hibben proceeds to state what these problems are. The subject matter of philosophy is Reality as distinguished from that which seems to be, and the sphere of Reality comprises three divisions: Nature, Mind, and God. Metaphysics is that branch of philosophy which deals with (1) ontology, or the nature of being in general, and (2) cosmology, or the origin of the universe. The ontological inquiry has been narrowed down in metaphysical discussion to the definite question: Is mind or matter at the basis of all things? Monism, of the materialistic or spiritualistic sort, and dualism are the different standpoints which have been adopted in the attempt to answer this question. The cosmological inquiry refers "not to the nature of the world and its phenomena, for that would be the problem of ontology, but to the origin of the world quite irrespective of the question whether the world is all matter or all mind, or partly matter and partly mind." What cosmology has to decide is whether the world can be explained in a purely mechanical way to the exclusion of all teleology. This

leads to the further problem of the relation of God to the world. Those who maintain the sufficiency of a merely mechanical explanation may be either agnostics or atheists, while their opponents may be polytheists, theists, deists, or pantheists. In addition to metaphysics, there is a separate department of philosophy which deals with man as a conscious being. The investigation of mind suggests certain general questions of a philosophical nature, as well as the special problems of a scientific psychology. Philosophical psychology is concerned with the nature and origin of the conscious self. Is there a separate self distinct from the phenomena of consciousness? Is the primary mode of psychical activity intellect or volition? These are the two chief questions with which this branch of philosophy has to deal. Further, among the general problems of mind there is a special problem, the discussion of which forms a distinct discipline, namely, the theory of knowledge or epistemology. The epistemologist investigates the source of our knowledge and the relation of knowledge to reality. Finally, there is the normative department of philosophy which includes logic, ethics, and æsthetics.

This analysis and classification of the problems of philosophy determines the general plan of the book. The remaining eight chapters are devoted to a detailed statement and discussion of the different questions and answers indicated above. The classification, however, seems open to the criticism that it does not bring out the true relations of subordination which must exist between the various disciplines. It seems to coördinate ontology, cosmology, and philosophical psychology, while epistemology comes in as a special problem of the general investigation of mind. But the cosmological question and the inquiry into the nature of the soul are ultimately specific ontological questions, and epistemology seems to be the only adequate correlate of ontology. But whatever may be said about the author's success in the difficult task of mapping out the field of philosophy, there can be no doubt about the merit of his treatment of the definite problems and theories. This detailed discussion constitutes, of course, the most important part of an introduction, and it is here that the author is seen at his best. As already stated, the book as a whole is an unusually successful attempt to meet the wants of the beginner, and can be very cordially recommended.

DAVID IRONS.

Dynamic Idealism, an Elementary Course in the Metaphysics of Psychology. By ALFRED H. LLOYD, Ph.D., author of "Citizenship and Salvation." Chicago, A. C. McClurg & Co., 1898.—pp. x, 248.

The contents of this fresh and interesting little work are divided into three parts, of which the first is 'The World of Things,' covering 58 pages, the second, 'The World of Ideas,' covering 98 pages, and the third, 'The World of Acts,' covering 29 pages. There is a brief introduction and, also, an appendix containing 'A Study of Immortality in Outline.'

Dr. Lloyd, though an advocate of Idealism, is careful to distinguish the idealism, which he calls formal and erroneous, from the idealism which is dynamic. With regard to the world of things, formal idealism and dynamic idealism agree in maintaining that things exist only in relation to one another, but they differ in their view of this relationship. "The existence of separate substantial things would be a necessary supposition if an only formal relationship prevailed. There would then be two distinct spheres or worlds, one of things and another of relationships" (p. 42). But, according to dynamic idealism, "relationship is essential in things; it is the things themselves, not a formal condition of them, it is substantial." "In activity lies that which makes relationship actual." "Relationship means activity." "Relationship and activity are one" (p. 43). Since "relationship is real only if dynamic" (p. 77), the whole, which can be described as a "system of relations" (p. 43), must be "active within itself" or 'self-active' (p. 52), "the name for such an animate system of relations is organism" (p. 54). Hence the world of things is an organism. But "intelligence is but the natural self-activity of a system of actual relations" (p. 45). Therefore, the world of things, when properly understood, is "spontaneously changing, living intelligent organism" (p. 54).

This conception of the world Dr. Lloyd applies to a number of metaphysical problems. Space is defined, not as a form, in which things exist, but as a force whose activity is the same as the activity of the self. It is "*the relational whole which constitutes the world's ableness to an organic self that sees and feels and moves*" (p. 82). Time, again, is "not a form of life or of consciousness, but a vital, organic incident of it," and is "essentially dynamic" (p. 155). Matter, though commonly called 'inorganic' is by means of this very term related to the organic, and therefore furnishes evidence of a "principle of organism that is deeper and broader than any of the recognized organic forms" (p. 55). Hence, matter, in this wider sense of organism, is "alive and organic" (p. 232). Since consciousness is an activity, ideas, which are states of consciousness, must be dynamic. "They are forces, not forms" (p. 113). Sensations are not, as has been said, the data of knowledge. "Not we have sensations, whatever their functions be said to be, but the consciousness of an organism is sensuous" (p. 144). Higher than sensations are preceptions, which have to do with "the individual wholes of experience" (p. 117). "The perceived world," says Dr. Lloyd with a certain hesitation, "is but consequent upon or correspondent to, if not indeed identical with, an acquired freedom of activity" (p. 115). Conception, again, "is the organizing activity that underlies the differentiation of the wholes [of perception], and seeks the fulfilment of their unity or relationship" (p. 117). That his use of the word 'higher,' to describe the relation of perception to sensation, may not lead us to think that these three states of consciousness are in some sense stages, Dr. Lloyd hastens to add, not only that sensation and perception,

but that conception, perception, and sensation are "organically one and so contemporaneous" (p. 119). In accordance with this thorough-going identity of consciousness with force, body and soul are said to be one. Immortality can be predicated, not of an abstract soul, but of an organism, with which is contrasted the merely composite, if such a thing has any existence at all. "The composite may decompose, but the organism never dies" (p. 236). Nay more, "conserved matter and immortal soul are one and the same reality" (p. 141).

Even from this hasty and partial abstract it is clear that Dr. Lloyd's aim is to prove the unity of thought and being, and it is only fair to say that in many places, especially in his treatment of space, time, and sensation, he throws new light on the old questions. In discussing ideas, however, he seems to hesitate between the theory of the unity of thought and being, and the theory of an abstract individual consciousness, with its accompanying 'states.' From the standpoint of such a consciousness, perception may be "identical with an acquired freedom of activity," and conception may be the organizing activity underlying the differentiation of the wholes of perception, but is the universe perceptive and thinking? Dr. Lloyd, it would appear to the reader, is in danger of entering upon the way which leads to the conclusion that perception and conception are merely the unreal indulgences of isolated minds, a conclusion from which dynamic idealism ought to deliver us.

But, apart from this suspicion of incomplete coherency, the unity of knowing and being seems to mean for the author the suppression of differences. The term, namely, 'force,' which is directly applied to ideas, is applied to heat and cold; the same word to body and soul. Even the phrase 'higher' assigned to perception in contrast with sensation, is practically withdrawn in favor of the view that the two are one. In fact, the universe seems to become not a unity of forces, but one single force. Such a universe it would be possible to compare with, let us say, the σφαῖρος of Empedocles, for whom differences were transient, and therefore unreal.

This objection Dr. Lloyd has, in a measure, anticipated, for he defines idea now as a force, and, again, as a "plan which sets activity free" (p. 122). A plan which liberates must be, in some respect, different from the activity which is liberated. It looks as if Dr. Lloyd here and elsewhere has relied on differences which he has not openly worked into his system. These differences must be admitted, however, since an activity in which there were no differences, would be, as Empedocles long ago seemed to realize, no activity at all.

S. W. DYDE.

Logic, Deductive and Inductive. By CARVETH READ. London, Grant Richards, 1898.—pp. xvi, 323.

This book opens as follows: "Logic is the science that explains what conditions must be fulfilled in order that a proposition may be proved, if it

admits of proof. Not, indeed, every such proposition ; for as to those that declare the equality or inequality of numbers or other magnitudes, to explain the conditions of their proof belongs to mathematics." Now the definition of logic thus given seems to me correct, only it might be more concisely expressed by calling logic the science of valid reasoning ; but what does Mr. Read mean by excepting mathematics from the purview of logic. The matters with which mathematics deals and the axioms from which the mathematician reasons are of course out of the logical field ; but the processes of reasoning in mathematics are just as much under the jurisdiction of logic as any others. That, however, is a question of applied logic, and few persons will be disposed to quarrel with Mr. Read's conception of the science. He treats of deduction first, and gives more space to that subject than to induction ; yet the latter process is treated with sufficient fullness for an elementary manual. He does not separate the two topics, however, by a hard and fast line, but takes pains to show the connection between them. In this attempt, though, he does not perfectly succeed, mainly, I think, because he refrains from discussing the fundamental principles involved, such as the laws of resemblance and causation and the nature of universals. His treatment of induction is based on Mills's; while the deductive part of his book is essentially like that of most logical text-books at the present day. He gives, I think, too much prominence to the reasonings of physical science, which form but a very small portion of the reasonings of mankind ; yet he does not think, as some writers seem to, that the 'scientific method' is different from that of every-day life, but carefully points out that it is the same.

With regard to the form of Mr. Read's book, I cannot speak with entire approval. His mode of expression, indeed, is generally clear and concise ; but it has a regrettable tendency to become obscure and verbose just when it ought to be the clearest ; especially in the enunciation of canons and principles. Thus he gives the *dictum* of the syllogism as follows : "Whatever is predicated (affirmatively or negatively) of a term distributed, in which term another is given as (partly or wholly) included, may be predicated in like manner of (part or all of) the latter term." But such obscurities are only occasional. The arrangement of topics is in some cases faulty. This is especially the case with the subject of definition and the predicables, which is treated near the end of the book after both deduction and induction, whereas it properly belongs in the earlier part in connection with the treatment of names and propositions. The only topic that seems to me inadequately treated is that of fallacies. The practical aim of logic being to guard us against errors in reasoning, we ought to be fully informed of the kinds of error that we are most liable to ; yet Mr. Read gives the fallacies only fourteen pages out of more than three hundred. On the whole, however, his book is entitled to a respectable rank among the text-books of the science.

Before concluding I wish to say a few words about the alleged 'fourth

figure' of the syllogism, which Mr. Read, like most other logicians, regards as "scientifically necessary, because it is inevitably generated by an analysis of the possible positions of the Middle Term." In fact, however, it cannot be generated at all, but is scientifically impossible. For example take the two following propositions:

All Frenchmen are Europeans,
All Europeans are White.

Those may obviously be made the premises of a syllogism in the first figure, the first proposition being the minor premise, and the conclusion being, All Frenchmen are white. But it is said we may also make the first premise the major, and so construct another syllogism having the conclusion, Some white men are Frenchmen; and such a syllogism is said to be in the fourth figure. But to treat the premises in that way is inconsistent with the very meaning of the terms 'major' and 'minor' as used in the syllogism. The major term is that which has the greatest extension, or denotation, which in the above example is 'white,' 'Frenchmen' being the minor, and 'Europeans' the middle term. I know it is customary to say that the subject of the conclusion is the minor and the predicate of the conclusion the major term; but that is merely a formal rule derived from the fact that in the conclusions of the first figure the terms stand in that order. The original and only philosophical meaning is that which I have stated, and that meaning cannot be altered or effaced. Consequently, we cannot treat the first of the above premises as the major, and therefore we cannot make a fourth figure at all. The well-known fact that Aristotle did not recognize a fourth figure shows that he understood the syllogism better than any of his successors.

JAMES B. PETERSON.

La philosophie de Nietsche. Par HENRI LICHTENBERGER, Professeur adjoint de littérature étrangère à la faculté des lettres de l' Université de Nancy. Paris, Félix Alcan, 1898.—pp. 186.

Nietzsche und Seine Weltanschauung. Eine kritische Studie von ROBERT SCHELLWIEN. Leipzig, Alfred Jansen, 1897.—pp. 45.

Although several of Nietzche's most important works have been translated into English, his philosophy seems to have attracted little attention either in England or in America. In Germany, however, quite an extensive Nietzsche literature has grown up during the last few years; and while Nietzsche is enthusiastically welcomed by some writers as the first moralist who has logically and fearlessly accepted the practical consequences of the doctrine of natural selection, others have fiercely combated both the psychological basis of his system, and disputed the truth of the historical and philosophical facts by which he seeks to support it.

The French work before us, by Professor Lichtenberger, gives a clear and thoroughly satisfactory account both of Nietzsche and his philosophy. The author is neither a partisan nor an avowed opponent of Neitzsche.

He treats his subject skillfully and sympathetically. Indeed, one can not help feeling that Professor Lichtenberger's studies have enabled him to understand to a remarkable degree the personality of his author. And there can be no doubt that this is absolutely essential in the case of Nietzsche: to represent the philosophy apart from the man—and especially to represent it by means of a few fragmentary propositions—is to reduce it to a somewhat violent and extreme, though not particularly interesting type of 'materialism.'

The book has six chapters, with the following titles: 'Le caractère de Nietzsche;' 'L' emancipation intellectuelle de Nietzsche;' 'Nietzsche philosophe;' 'Le système de Nietzsche, partie negative—l'homme;' 'Le système de Nietzsche, partie positive—le surhomme;' 'conclusion.' In the conclusion, the author summarizes the most important criticisms which have been made against Nietzsche, and briefly discusses their value. He does not himself, however, offer any discussion of the philosophical principle of the system.

Schellwien's little pamphlet is a criticism of the psychological and philosophical basis of Nietzsche's philosophy, and more particularly an attempt on the part of the author to state what he conceives to be the true view regarding the nature of knowledge and will. He finds the root of the philosophie of Nietzsche to consist in his reduction of knowledge to an instinct or emotion, or, at least, in regarding it as something secondary, an instrument or tool which the emotions use for the accomplishment of their ends. This, Schellwien declares, is a false inversion; knowledge is the presupposition of all emotional impulses. Nietzsche has neglected men as knower, and not only given us no theory of knowledge, but has thereby failed to furnish an adequate account of the true nature of man. The book contains some acute or valuable criticism, which, however, would have been still more effective if the author had kept his own constructive theories, which seem, as stated here, far from intelligible, until an opportunity presented itself for more systematic and detailed exposition.

J. E. C.

Les origines de la psychologie contemporaine. Par D. MERCIER. Institut Superieur de Philosophie. Louvain, 1897.—pp. xii, 486.

We have here a treatment of modern philosophical and psychological problems from the standpoint of Aristotle and Thomas Aquinas. Professor Mercier outlines the development of modern thought as it affects psychology from Descartes to the present, and criticizes each view in the light of its bearing on modern problems. He traces both materialism or positivism and idealism to the mechanical body and independent mind that were brought together but not unified in the philosophy of Descartes. From the first, develop the materialism of La Mettrie, Hartley, and Darwin—from the second, are derived the occasionalism of Geulincx, the idealism of Berkeley, the skepticism of Hume, and the criticism of Kant and the post-

Kantians. With the vanishing of final causes on both sides, there has developed the positivism that holds sway in both materialism and idealism at the present time.

But human thought is not content to describe without explaining the phenomena of mind and nature. This is brought out in an analysis of three prominent systems of philosophy in England, France, and Germany. The 'unknowable' of Spencer, the 'indistinct appetite' of Fouillée, and the 'absolute will' or apperception of Wundt are all evidences that the modern thinker is not satisfied to disregard final causes. This is true in spite of the apparently dominant purpose in modern psychology to limit the science to the conscious factors, to disregard metaphysics, and to base everything upon experience.

The work closes with a refutation of idealism, mechanism, and positivism, and the consequent proof of the neo-Thomistic doctrines of the Catholic Church. Idealism is disputed by an appeal to common sense. Impressions must have a cause in the external world, and it is impossible to judge without an extra-mental criterion of truth. Mechanism is opposed by teleology. Mechanical or efficient causes are identical with chance, and chance cannot give rise to order. Only a definite plan, a final cause could have produced the world as we see it. Given a final cause in mind and in nature, positivism falls.

In the final chapter, the history of neo-Thomism is sketched, and its relation to modern secular philosophy and psychology indicated. The critical problems of epistemology are rejected at once as of no value, except to enable the mind to re-affirm its belief in the validity of its own processes with greater positiveness. Man is not wise if he questions the worth of the tool with which he must work. A kindlier spirit is shown toward experimental psychology. The Aristotelian teaching of an organic unity of mind and body is well adapted to replace psycho-physical parallelism as a basis for modern science, and none of the results of psychology are likely to prove incompatible with the general principles of the fathers, and if they do are still to be accepted, according as is permitted by the enlightened encyclical of Pope Leo XIII.

The tone of the work is fair, the historical discussions show high scholarship, and in some cases very acute objections are raised against current theories, but great timidity is shown in attacking fundamental problems that might lead to dangerous conclusions, and this in spite of the avowed belief in free inquiry that is emphasized throughout the work. It is distinctly not a contribution to knowledge. W. B. PILLSBURY.

Einfühlung und Association in der neueren Aesthetik. Von PAUL STERN. Hamburg und Leipzig, Leopold Voss, 1898.

The early chapters of this monograph illustrate from the writings of the Romanticists, and especially from the pages of Novalis, the theory that the æsthetic consciousness is an *Einfühlung*, that is an identification of con-

scious subject with object. The development of this theory is traced in detail through the writings of Lotze, Groos, the Vischers, and others. Two main forms of *Einfühlung* are distinguished: the subject's realization of oneness with the object, becoming sometimes a loss of personality; and, second, the endowment of the object with properties borrowed from the subject, and definitely recalling his qualities and activities. To this latter class belong all forms of symbolic æsthetics, including Lotze's *Erinnerungstheorie*, the explanation of an object's beauty as due to its direct likeness to the human body. The other form of the theory includes explanations, like that of Groos, which refer æsthetic consciousness to the pleasure of imitation.

The remainder of the essay is devoted to the defence of the 'Association theory' of Æsthetics, which is contrasted, in detail, with the *Einfühlung* explanation. Æsthetic impressiveness is described (page 71) as the presence, along with the presented object, of externally associated factors, and, in particular, of associated personal experiences. These last are results of similarity association, often unconscious. So, for example (page 71), "the up-springing column can make an æsthetic impression upon us, only if we have realized in it, on the ground of common experiences, the elements of bearing, supporting, striving, (*die Momente des Tragens, Stützens, Emporstrebens*), and if we have connected and enriched this consciousness, through similarity association, with early, personal experiences." In the same way, a human body is not beautiful as a conglomerate of colors, but rather, in the words of Lipps, "*als der unmittelbare und naturgemässe Ausdruck des Inneren einer Persönlichkeit.*"

The first comment which suggests itself concerns the adequacy of the name 'Association-theory' to such a doctrine. The æsthetic object, as thus described, does indeed contain associated factors, but the nature of these suggested elements, not the bare fact of their being associated, gives them their æsthetic significance. Now this 'æsthetic' value of the associated elements turns out to be just their relation to personal experience, so that the 'Association-theory' becomes virtually identical with the decried *Einfühlung* hypothesis.

It has already been suggested that the discussion presupposes throughout the Herbartian mechanics of the soul, in the form in which Lipps conceives it. "Associated ideas become effective, in the form of excitations which remain unconscious (*unbewusst bleibender erregungen*) and then manifest themselves in consciousness as feeling or disposition;" pleasantness and unpleasantness are referred (p. 57) to the "*Forderung und Hemmung von Vorstellungen*" or more exactly to the "ease or difficulty with which the soul as a whole brings forth these ideas." It is evident, therefore, that the discussion can have little value for those who reject the metaphysics, masquerading as psychology, of any form of Herbartianism. Occasional instances of fruitful analysis, like the suggestion (p. 61) of the objectivation of the æsthetic feeling, are overlaid with fanciful explanations and with barren subtleties.

WELLESLEY COLLEGE. MARY WHITON CALKINS.

La religion de la science et de l' esprit pur. Par J. STRADA. Paris, Félix Alcan. 1897.—Tomes, I, II, pp. xvi, 405; xii, 578.

M. Strada's works are brilliant in style, inconsistent, amusing, and eloquent in many passages. In turn, he resorts to argument, pleading, and vituperation. His construction is a bizarre mixture of idealism and positivism. He displays an encyclopedic knowledge, and does not hesitate to regard his exposition of Scientific Theism as the extinguisher of all subjective fideisms, and *a priori* philosophies or 'rationalisms.' Condemning all *a priorism*, he indulges an *a priorism* quite as pontifical as that of Hegel or Spinoza. His cosmogonic process is reached by a regress, at first, from the 'Fact' which is the Word or Messiah. The Fact impersonal, objective, is the fact material or of numerical relation, the fact ethical or sense of right and justice. He bases his science upon the impersonal method, barring out sternly all introspective psychology, putting out of court all subjective standards of scientific judgment. The incessant confusion of the subjective and objective, while claiming all for the objective method, is a distress to the reader. He is vigorously idealistic in postulating Pure Mind, Energy, Force, and Love, as the origin of the whole process. It is Mind or Love whose essence is initiation, movement, creation in time. This 'esprit pur' or Mind is absolute, preantinomique. It is Force or Idea in surplus, God transcendent. The Absolute Idea engenders movement fatally, and thus becomes the Motor Idea or creative mundane Idea, expressing itself with spontaneity in the 'Fact,' Word, Messiah, the only mediator. The religion of science is not the religion of faiths, mediators, or of personal rationalism, or of philosophy; all philosophies are personal, egoistic, unscientific. The idea of the sculptor expressed in the statue or fact is not the idea in surplus, not the preantinomique idea of the artist, but it is the antinomique or motor idea which is expressed in numerical relations. The motor idea of the sculptor expressed in the fact or statue does not exhaust the idea of the artist. He can express other ideas in other works of genius. Thus the pure, absolute, preantinomique idea becomes the motor or creative idea, and the world of facts appears in time and has a beginning. The motor idea passes into heat, electricity, light, atom, vapor, worlds, beings, souls. All begins and ends with 'pensèe.' Thought becomes energy in the world and energy returns in man to thought. But the human soul is not a substance, nor is God substance. The soul of man is an evolution by agency of the forces. Men are not individual portioncules of God, not derivative egos from God according to a spiritualistic psychology, but only personalized thought, reëxpressions of the motor idea which has in the evolutionary process passed through cosmic transmigrations.

Experimental psychology comes in for its share of scorn. The organism is only a condenser by which Divine thought is transformed into human mind, no substance and yet man is a person and immortal because a final cosmic expression of Divine mind which is immortal, the essence of man is that of the eternal motor idea. God himself is highest personality yet not

a substance. Personality, human or divine, is not, in the author's psychology, satisfactorily defined. And so Kant is guilty of impudence, Hegel and Spinoza are blind leaders, materialists, and pantheists as well, and are driven from the field. The author levels his lance at all comers. Much that Strada says concerning primitive belief and history of primitive man is sound and suggestive. In accord with Müller, Jevons, and, now later, Andrew Lang, the monotheistic concept of primal ineluctable force, energy mind, lapsing into polytheisms, fetichisms, androgynisms, and trinities, is accepted and brilliantly stated.

The system of Strada for many years advocated by him with sibylline fervor, is a chaotic, pretentious system, giving evidence of great intellectual power and vast scholarship, containing passages of striking elevation of thought, and tinged with mystical humility combined with daring egoism. Professing to be severely scientific, sometimes lauding the Founder of Christianity, Gautama, and others, in the end he banishes them all as outgrown fideistic and rationalistic mediators setting up the subjective consciousness in opposition to the objective fact. Jesus, Gautama, together with Kant, Hegel, Spinoza, *et id omne genus* are all exiled from scientific respect. One will experience vertigo in reading these volumes, but will rise from their perusal conscious that a potent spell has been cast over him, and that he has learned not a little.

CHARLES MELLEN TYLER.

The Origin and Growth of Plato's Logic, with an account of Plato's style and of the chronology of his writings. By WINCENTY LUTOSLAWSKI. London, New York, and Bombay, Longmans, Green & Co., 1897.—pp. xviii, 547.

Not many scientific works on Plato's philosophy can be recommended for summer reading, but, whatever may be the final verdict on this work of Lutoslawski, there can be no question as to the attractive form in which his conclusions are presented. Much of the present work has already been published in the author's native tongue, or in French or German (p. ix, n. 2), but to the perfect familiarity with his subject that has been reached by this method he adds an English style that might well be emulated by many thinkers to whom English is a mother tongue. The paragraph on Plato and the poets (pp. 318–319) shows the capacity of the writer in this direction.

As the title indicates, the work falls into two parts, the first discussing the chronology of Plato's works, the second treating the development of his logic. For questions of chronology the author depends mainly on 'stylometric' grounds, while allusions to historical events and to other writers receive relatively little weight. *Stylometry* is the word used to denote the numerical analysis of peculiarities of style. The works of some forty previous writers on Plato's style are presented in outline, with special emphasis on the essays of Lewis Campbell. The material which had been previously gathered is not augmented; rather it is the writer's aim to examine this material for

data as to chronology, and with this in view 500 peculiarities of Plato's style are selected and the relative frequency of their occurrence in the different dialogues noted. Finally, an attempt is made to determine the order of the important dialogues by their 'relative affinity' to the *Laws* according to the tables of stylistic peculiarities. The difficulties in the way of attaining ultimate results by this method are occasionally mentioned, but the author glides over them very easily. In only two or three instances is any attempt made to estimate the opportunity for the occurrence of the peculiarity noted. Indeed, the proportion of peculiarities to the amount of text covered is neglected surprisingly often, considering the importance that is rightly attached to it. In a word, the method has not yet been proved adequate, much as this writer may say in its praise. The reader should be on his guard, especially against the phrase *relative affinity* between different dialogues and the *Laws* in the matter of style. This is no "constant like the physical constants of natural science" (p. 187) for, strangely enough, no attention at all is paid to differences of length in the dialogues in determining it. The result is that the longer a dialogue is, the greater the figure which this writer terms its *relative affinity* to the *Laws*. At the same time most of the author's conclusions as to the order of the important dialogues will, I think, be accepted by students who examine the question in an unprejudiced manner.

The larger half of the work deals with the purely philosophical question of the development of Plato's logic, the term *logic* including *theory of knowledge* if not *metaphysics*. The author traces in the first period (Socratic dialogues) the development of a logical method, and of an interest in logic as such, in writings where particular virtues are studied by the Socratic method; till finally in the Gorgias Plato enunciates the certainty of knowledge, as truth that is proved by right reasoning. In the second period, Plato studies the question, How is knowledge certain? The *Symposium* announces the discovery of beauty as the first *idea*, and in the *Phædo* a system of *ideas* is propounded. This system Plato applies to politics and education in the *Republic* and the *Phædrus*. M. Lutoslawski treats the questions as to the date of *Phædrus*, and the composition of the *Republic* in a particularly sane and convincing manner.

The group of critical dialogues beginning with the Theætetus belongs, it is urged, to the period following the *Republic*. This position does not depend wholly on the science of stylometry, and, as the author shows, it illustrates very clearly the development of Plato's thought. The theory of *ideas* is sharply criticised—for our author accepts the *Parmenides* as genuine—and Plato would substitute for it a new theory of souls as the explanation of the universe. This new theory, suggested in the critical dialogues, is finally elaborated in the *Timæus* and the *Laws*, which are generally regarded as Plato's latest works.

The main contention of the book on the philosophical side is that Aristotle was wrong in regarding the system of ideas as the full and final expression

of Plato's views. We are told that this system was the product of Plato's earlier thought, and that it was substantially modified, if not set aside, by the new belief in souls as the final elements of being. This point is urged with much skill, but the interest of the book is due quite as much to the light it throws on Plato's life and work as to this its main theme.

ARTHUR FAIRBANKS.

God, the Creator and Lord of All. By SAMUEL HARRIS, D.D., LL.D., Professor of Systematic Theology in Yale University. New York, Charles Scribner's Sons, 1896.—Vol. I, pp. x, 579; Vol. II, pp. vii, 576.

This work is an exposition of orthodox Christian theology written in a philosophical spirit by one who is widely conversant with philosophy as well as theology. The significance of the title is explained by the following statement: "When we think of the universe as dependent on God for its being and continuance, we call him its creator and preserver. When we think of him as acting in and through it in the accomplishment of the purpose of his wisdom and love, we call him its ruler, governor, sovereign, or Lord" (Vol. I, p. 521). A few quotations will best show the spirit of the writer and the fundamental conceptions on which the work is based.

"All science rests on the postulate that the universe is grounded in reason, that it is constituted and has been evolved in accordance with principles of reason the same in kind with human reason. . . . Reason thus revealing itself in the constitution and evolution of the universe in God. The whole fabric of human knowledge and of all science rests on the postulate that God, the absolute Spirit, exists and is revealing himself in the universe (I, p. 51). . . . Man is conscious of his physical environment in its action on him through his sensorium. He is conscious of God, his spiritual environment, in his action on him through his spiritual susceptibilities (I, p. 56). . . . By the intuition of reason we know universal principles regulative of all thinking and acting. But by these subjective principles alone we cannot know what beings actually exist and what are their character and lines of action. These can be known only as they reveal themselves, their constitutional powers, and their characteristics, by acting directly on us or under our observation, or by the observed effects of their action" (I, p. 99).

Thus reason and revelation are the two necessary and coördinate sources of all knowledge, whether of nature (the physical) or of the supernatural (the spiritual). In spite of almost an entire chapter (Vol. I, ch. II), devoted to clearing up the "misconception of revelation," one feels that the fundamental point is still unproven. The theistic philospher may well admit what the author calls the primary revelation of God (the revelation of God in the universe and in history), and still fail to find adequate evidence for the "revelation in prophecy." The narrowness of certain Christians in ignoring the primary revelation is well controverted, but the difficulty of the scientist and philosopher in finding evidence of the revelation in prophecy

is not met. In short, revelation has two quite different meanings, and, after establishing it in one sense, our author seems to expect his reader without more ado to accept it in the other. In most cases the twofold sense of the term is quite ignored, and the point at issue is kept out of sight.

One chapter considers God as Absolute Being, and three chapters as Spirit, discussing him respectively under the aspects of Reason, Will, and Feeling. A reconciliation of agnosticism and rationalism is suggested in this study of the one only God under the two aspects of Absolute Being and personal Spirit. Only the Trinitarian conception of God can resolve all the difficulties and antinomies of philosophical theism. "The Trinity combines both aspects of the absolute Spirit and presents them in harmony and unity in God. It gives full emphasis both to His personality and to His absoluteness. . . . In the Trinity the two phases of the idea of God as the one and the manifold are comprehended in harmony and unity." The Trinity further affords a rational basis for God's transcendence and immanence, for "comprehending Him as eternally active within His own absolute Being independently of the creation," for His "action revealing Himself in the universe while not identical with it." "The conclusion is, therefore, alike from the essential elements of the doctrine and from history, that the Trinity, as revealed in Christ, is the only worthy conception of God, satisfying the demand of reason. A true definition of God must set forth both His absoluteness and His personality, His oneness and His manifoldness, His transcendence and His immanence, His independence and His communicableness" (Vol. I, ch. ix). Whatever may be one's view as to the truth of the doctrine of the Trinity and the validity of the arguments by which Dr. Harris seeks to justify the above claims for the doctrine, he has at any rate succeeded in expounding the doctrine itself so as to free it from the internal contradictions and absurdities popularly associated with it. "God is not," he says, "three in the same sense in which he is one. He is not three beings in one being, nor three Gods in one God, nor three persons in one person. He is one God in three eternal modes of being" (I, p. 327). His illustration for this is the trinity of Reason, Feeling, and Will, in the unity of spirit. The three chapters on the Trinity and the one preceding these on Theodicy are perhaps the most interesting to the metaphysical reader.

The second volume is largely ethical. The fundamental thought here is that the universal law, love, has two coördinate aspects, righteousness and benevolence. The result, to my mind, is rather a convenient accomodation of Intuitionism and Utilitarianism than a true philosophical synthesis of their respective truths.

In the above remarks we have confined our attention to the philosophical aspect of the work. It is a solid contribution to both philosophical and religious thought. The style is clear and concise. Frequent illustrations from the best literature serve to lighten in some measure the task of attending to such solid subject matter.

F. C. FRENCH.

VASSAR COLLEGE.

The Metaphysic of Experience. By SHADWORTH H. HODGSON. London, New York, and Bombay, Longmans, Green and Co., 1898.—In Four Vols., pp. xix, 459; viii, 403; viii, 446; viii, 503.

In this work we have presented in four large volumes the complete statement of the philosophical system, of the author of 'Time and Space,' 'The Theory of Practice,' 'The Philosophy of Reflection,' 'Outcast Essays,' etc. Although having treated the subject in these earlier works, as well as in various articles contributed to *Mind* and other periodicals, Mr. Hodgson tells us that "he applied himself to a thorough-going review and re-examination of the philosophical field," and "resolved to go over the entire subject again—foundations, method, results." The present 'Metaphysic of Experience' is the outcome of the re-investigation. The work falls into four books, the first three of which are analytical in character, while the concluding book discusses the limitation of human intelligence in its endeavor to form a positive conception of the universe as a whole. The titles of the different books and chapters of themselves indicate the method and wide range of the treatment. In Book I, on the General Analysis of Experience, are discussed in successive chapters, The Metaphysical Method, The Moment of Experience, The Time Stream, Feelings in Spatial Extension, Objects in Space of Three Dimensions, The External World, The World of Objects Thought of, The World of Real Conditions. Book II, on Positive Science, treats of the Birthplace of Science, The Positive Science and Results for Philosophy. Book III contains Analysis of Conscious Action and a treatment of the Foundations of Ethics, while the last Book is entitled The Real Universe. [Review will follow.]

The following books also have been received:

An Outline of Philosophy. By JOHN WATSON. Glasgow, James Maclehose & Sons; New York, The Macmillan Co., 1898.—pp. xxii, 489.

The Psychology of Peoples. By GUSTAVE LE BON. New York, The Macmillan Co., 1898.—pp. xx, 236.

The Play of Animals. By KARL GROOS (tr. by Elizabeth L. Baldwin). New York, D. Appleton & Co., 1898.—pp. xxvi, 341.

Leibniz: The Monadology and other Philosophical Writings. Translated with Introduction and Notes by ROBERT LATTA. Oxford, The Clarendon Press, 1898.—pp. x, 437.

University Addresses. By JOHN CAIRD. Glasgow, James Maclehose & Sons, 1898.—pp. x, 383.

Life, Death, and Immortality. By W. M. BRYANT. New York, The Baker & Taylor Co., 1898.—pp. vi, 442.

Thomas Reid. By A. CAMPBELL FRASER. Edinburgh and London, Anderson & Ferrier, 1898.—pp. 160.

The Sphere of Science. By F. S. HOFFMAN. New York and London, G. P. Putnam's Sons, 1898.—pp. viii, 268.

The Art of Memory. By HENRY H. FULLER. St. Paul, National Publishing Co., 1898.—pp. ix, 481.

Elements of Sociology. By F. H. GIDDINGS. New York, The Macmillan Co.; London, Macmillan & Co., Ltd., 1898.—pp. xi, 353.

Human Immortality. By W. JAMES. Boston and New York, Houghton, Mifflin & Co., 1898.—pp. 70.

The Story of the Mind. By J. MARK BALDWIN. New York, D. Appleton & Co., 1898.—pp. vii, 236.

The Rise and Growth of American Politics. By HENRY JONES FORD. New York, The Macmillan Co.; London, Macmillan & Co., Ltd., 1898. —pp. viii, 409.

System der Philosophie. Von JOSEF MÜLLER. Mainz, Franz Kirchheim, 1898.—pp. vii, 372.

Sozialpädagogik. Von PAUL NATORP. Stuttgart, Fr. Frommanns, 1899. —pp. viii, 352.

Komik und Humor. Von THEODOR LIPPS. Hamburg und Leipzig, Leopold Voss, 1898.—pp. viii, 264.

Névroses et Idées fixes; II. Par F. RAYMOND et PIERRE JANET. Paris, Félix Alcan, 1898.—pp. 558.

La notion de temps. Par DÉSIRÉ NYS. Louvain, Institut supérior de philosophie, 1898.—pp. 232.

La liberté et la conservation de l'énergie. Par MARIUS COVAILHAC. Paris, Victor Lecoffre, 1897.—pp. 324.

L'éducation des sentiments. Par P. F. THOMAS. Paris, Félix Alcan, 1899.—pp. 287.

Apercus de taxinomie générale. Par J. P. DURAND. Paris, Félix Alcan, 1899.—pp. 265.

Destinée de l'homme. Par M. L'ABBÉ C. PIAT. Paris, Félix Alcan, 1898.—pp. 244.

NOTES.

Recent Discussions of Imitation.

Psychology and sociology have been approaching each other of late years in a manner which is very interesting to the students of both sciences. The former has discovered that the study of the individual mind is incomplete, if pursued without considering the enormous influence of the social atmosphere; while sociology has realized that the primary material of all social development must consist of processes which take place in the individual consciousness. To this rapprochement of the two sciences nothing has contributed more than the discussion and development of the concept of imitation, a discussion whose leaders have been M. Tarde in sociology and Professor Baldwin in psychology. The present writer has no ambition to add anything to current thought on this very important subject, but a brief résumé of the chief applications which the thought of imitation has thus far found, may be of service to those readers of the Review who have lacked time to pursue the subject for themselves.

To begin with, one must distinguish a broader and a narrower sense of the term 'imitation.' For Tarde, as a sociologist, the fact of imitation itself is accepted without analysis; he is concerned purely with its function as a social phenomenon. Imitation, as he regards it, means simply the fact that a certain state of mind existing in the consciousness of one individual tends to 'propagate itself' in the minds of those persons with whom he is brought into contact. This of course is a social phenomenon. Baldwin, on the other hand, as a psychologist, undertakes to analyze the above mentioned fact, and is led in the course of this analysis to extend the meaning of the term imitation to include phenomena that have, strictly speaking, nothing social about them; that are, as Tarde would say, purely vital. For it is evident that the process by which one man imitates another's mental states must be in the first instance an imitation of that other's bodily movements, since these alone are directly accessible to observation. But imitating the movements of another person, which is a social phenomenon, does not differ, regarded psychologically, from imitating any external stimulus whatever, one, for instance, that proceeds from an inanimate object, though the latter process has no direct social significance. And imitating a stimulus means moving so as to reproduce the stimulus. Therefore Professor Baldwin extends the term imitation to cover any motor process that reproduces the stimulus, of whatever character, which originated it.

Bearing in mind, then, these two applications of the term, the one restricted to imitation of persons, the other extended to imitation or repro-

duction of any kind of stimulus, we find that the conception is claimed to be fruitful in at least four different fields of thought: biological, psychological, ethical, and sociological.

I. As regards biology, Professor Baldwin suggests (1) that the imitative form of reaction is the original and primitive form. He refers here to the cell theory of Max Verworn, according to which the outer layer of molecules in a mass of protoplasm, acted upon by the oxygen at the surface, liberates elements which combine with those at the nucleus, setting free other elements which are again drawn to the surface through their affinity for oxygen—the protoplasmic movement being thus essentially a form of movement which reproduces its own stimulus. (2) Professor Baldwin further holds that the imitative or stimulus-repeating action is a very important factor in development. Described in general biological terms, an imitative reaction occurs when, under a stimulus of such a character as to produce excess of energy in the organism, this excess is discharged in movements which tend to prolong or repeat the stimulus. Now, if there were not such an arrangement for securing repetition of stimuli, the formation of new habits, and hence development, on the part of the organism, would be practically impossible, for the repetition of a new stimulus, upon which adaptation depends, would be a mere accident of environment.

II. Psychologically, the two most important applications of the conception of imitation concern the conscious processes accompanying movement, and the development of self-consciousness. (1) Professor Baldwin attempts to show that imitation is the fundamental fact in consciously directed movement; that, as he puts it, "every intelligent action is stimulated by imitative copies whose presence the action in question tends to maintain or to suppress." When an action seems to lack the imitative character, that is because the 'copy' is a purely mental one called up by association, instead of an external one actually perceived. We do not ordinarily say that the child 'imitates' the taste of a peach when it grasps and bites one, but the memory of the taste is present as a stimulus to action, and the movement results in a repetition of this stimulus; hence, it may be said to belong to the imitative type. Since Professor Baldwin considers the motor aspect of such processes as recognition, attention, and the formation of concepts to be their essential feature, it will be seen that, in making imitation the basis of all intelligent action, he is putting it at the foundation of mental life. (2) When we come to imitation as a factor in the development of self-consciousness, it is imitation in the narrower, purely social sense that we have to deal with—where the copy reproduced is not any stimulus whatever, but the movements of some person. Professor Baldwin shows very clearly that the individual in the early stages of his development adds to his stock of experience largely by imitating the movements of surrounding persons, and attributes to these persons mental states similar to those produced in him by the imitative movements; that thus his sense of self and his sense of other selves develop simultaneously; that, in fact,

the concept of self is a true concept, which the individual applies from the outset alike to his own self and to all other individuals whose behavior he can interpret by imitation.

III. This leads us to the first of the two most important ethical applications of the imitative principle. These are, first, a kind of "reconciliation of egoism and altruism," and, second, the introduction of an influential factor, 'social heredity,' into the discussion of moral development. (1) Since, as we have just seen, the thought of self is essentially generic, not particular, it follows that whatever is predicated of my self is, *ipso facto*, predicated of any other self, and *vice versa*. For the identity of the thought of ego and the thought of alter, with all its moral significance, imitation is largely responsible. (2) In the second place, imitation is the great means by which the existing moral code of society reproduces itself in each new individual. The result of 'social heredity' is the moral equipment which the individual acquires through imitation from surrounding society, and social heredity, when given its due importance, renders the Spencerian hypothesis of actual biological inheritance of moral instincts much less necessary to explain the progress of morality.

IV. We come now to the sociological aspect of imitation, which has been so fully discussed by M. Tarde. Briefly, imitation, in the narrower or social sense, is regarded as, first, the function which constitutes the essence of a society, and, second, the function which renders social progress possible. (1) A society is an aggregate of persons who think and act alike along certain general lines. One individual regards another as a fellow member of society, only if he expects from him thoughts and actions similar to those which he himself would have and do in the same circumstances. Now the source of similarity in thought and behavior is to be found in imitation. (2) Secondly, it is by means of imitation that new ways of thinking and acting spread and gradually alter the whole character of a society. This idea might seem sufficiently obvious, but it has been reserved for M. Tarde to make a careful study of the laws which govern the spread of imitative currents in the social medium, the interferences of these currents and their mutual modifications. These last are the source of inventions, which, originating in the mind of some exceptionally endowed individual, set new copies for society to imitate. To the question: "What is it that is imitated?" Tarde answers, "Beliefs and desires;" "Baldwin, Thoughts." The difference is insignificant, for beliefs and desires represent that aspect of thoughts which bears immediately upon action, and hence is most important with reference to imitation. Professor Baldwin, by the way, errs in stating ['Social and Ethical Interpretations,' p. 479] that M. Tarde gives no answer to the question, 'What is imitable?' until his later work, *La logique sociale*: he considers the point on pp. 163 ff. of *Les lois d'imitation*.

The concept of imitation has not escaped discussion from the metaphysical standpoint. M. Tarde is impressed with the analogy between the three great forms of 'Repetition:' undulation in physics, heredity in biology,

and imitation in sociology; and with the fact that in these three sciences, which cover the phenomenal world, the laws of phenomena may be generalized under the three heads of Repetition, Opposition, and Adaptation. He advances the hypothesis, contrary to the orthodox evolutionary theory, that heterogeneity is the primitive state of the universe, and that the homogeneous is a product of repetition and adaptation. Again, Professor Royce [PHILOSOPHICAL REVIEW, IV, 5, 6] makes imitation a link in the chain of argument by which he answers the question as to what kind of real existence we may attribute to nature. He reasons that, since the only kind of real and independent existence of which we have direct evidence is that of other people's minds, in which we believe because we can interpret by imitation the movements of the bodies by which those minds are phenomenally manifest to us, therefore we should attribute this kind of reality to other natural objects, and regard the world of inanimate nature as a world of conscious experience independent of ourselves, which is not a social world for us simply because we cannot imitate it as we do our fellow creatures.

So manifold are the directions in which the thought of imitation has shown its applicability. Time will doubtless make it apparent that some of these applications are much more important than others. The "social and ethical interpretations" of imitation, for example, seem to have vastly more value for sociology and ethics, than the biological and strictly psychological aspects of the conception have for biology and psychology. In short, one might say that imitation in the narrower, social sense is a thought of more fruitfulness, one which solves or casts light on more problems; than the wider conception of imitation which makes it a biological term.

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CURRENT DISCUSSIONS OF PSYCHOLOGY AND EDUCATION.

That psychology is a science will, I suppose, be admitted even by modern Jeremiahs who sit in ashes, lamenting its limitations and its unfruitful alliance with pedagogy; just as little will the practical aspect of education be denied. So far, then, as psychology is theory, and education practice, there can be no doubt of the general direction of dependence. In regard to the dependency itself, it seems useless to raise a question. The application of psychological results to the practice of teaching, is just as natural and inevitable as the application of physical and chemical knowledge to physiology, or of physiological knowledge to medicine, or of the principles of constitutional law to statecraft. The objection that the psychologist is not necessarily an educator, affects the matter as little as a similar statement, that the physiologist is not a physician, affects the value of physiology to medicine.

On the other hand, the question of the applicability of teaching methods and their results to psychology does not admit of so categorical an answer.

The evaluation of such material will have to be left to the psychologist, since he alone is supposed to know his own science. The fact that its value for psychology has been closely questioned does not give the subject general interest outside the psychological laboratory and study.[1] So far as it implies a return to education, as the result of psychological study of the child, it falls under the head of educational benefits from psychology, and will be noticed later. It is to be remarked that 'child psychology' is not a thing *sui generis*, but a particular province of psychology at large.

The main question in this connection, then, concerns the value of psychological methods and results to education. Recent attempts to answer this have complicated the problem by raising a previous question, namely: the validity of psychological methods themselves. The inference has been drawn that a superannuated or unsound psychology offers a poor basis for education. Thus, for example, the statement of a noted educator that "the interest in Herbart's psychology is to-day based almost wholly upon its application in education[2]" has provoked the query, "since it is antiquated as psychology, may it be depended upon as a psychologic foundation to education?" Similarly Professor Münsterberg's warning[3] against experimental psychology gives us pause in estimating the utility of its methods for teaching. In discussing the dangers from psychology, the writer just named lays it down that the teacher is unwise to coquette with experimental psychology; for experimental psychology professes to be quantitative, and mental facts are only qualitative. Now the cry that psychology deals exclusively with unmeasurable terms has been raised too many times to cause much of a flutter of excitement within psychology itself. It is not, however, a common sight to see an acknowledged Samson eager to unpillar his own science without first quitting its shadows.

Inasmuch as Professor Münsterberg's attack seemed to offer an excuse for closing certain avenues of communication between the psychological and the educational worlds, his articles have attracted notice from several directions. Discussion of the subject at this time is further explainable from the fact that widespread cogitation of very serious problems relating to psychology and pedagogy had laid a train which only needed the spark to set it off. Let us follow the trend of discussion. Professor Bliss, of the New York School of Pedagogy, writing from the standpoint of practice, denies that the relations of psychology and pedagogy need the prophesy of the alarmist.[4] He defines a territory within which he finds signal aid coming to

[1] Cf. Professor Baldwin on child study, *Psychological Review*, March, 1898, p. 218, also references which he gives.

[2] Nicholas Murray Butler, *Psychological Review*, I, 82.

[3] *Atlantic Monthly*, February and June, 1898. Cf. Preface to Münsterberg's pamphlet, *Psychological Laboratory of Harvard University*, 1893: "With an increasing recognition that the results of experimental psychology are important, not only to psychologists and philosophers, but also to teachers and physicians, there is a growing desire for new laboratories."

[4] *Forum*, April, 1898.

the teacher through psychology. Professor Cattell, continuing the argument,[1] dissents entirely from the main theses of the *Atlantic Monthly* articles. These are: (1) That mental processes cannot be measured; and (2) that experimental psychology is useless to the teacher. If the first thesis, he says, were true, the charge of inconsistency might well be brought against Münsterberg, who has himself written of 'Zeitsinn,' 'Augenmass' and 'Psychometric Investigations.'[2] In regard to the second point, Professor Cattell writes: "The experimental study of the senses, of memory, attention, habit, fatigue, etc., has enriched psychology in a direction of special interest to pedagogy. The practical applications are limited, but we hope that they will increase, and in the meanwhile the subject is profitable and stimulating to the teacher." A similar, though perhaps less radical, statement is made by Professor DeGarmo from the educational standpoint:[3] "It would be no greater error," he says, "to affirm that the chief need of all the half-educated teachers of the United States is a course in experimental psychology, than to make the equally extravagant statement, that psychology of whatever kind is valueless to the teacher directly."

Once more, in regard to 'quantitative' psychology as contrasted by Professor Münsterberg with 'qualitative,' or analytic psychology, Professor Titchener points out that mental contents are measureable at least so far as they can be treated as 'function,' as capacity; and it is just this kind of psychological treatment, he believes, that offers most to the teacher. Ebbinghaus's work on memory, and on fatigue among the school children of his own city, would, I suppose, be fair samples. Still, this is a question for psychology, and has only been brought into the present discussion by force. Time has happily relieved psychology of further defence of its presuppositions and methods, by bringing a more moderate statement from the Harvard Laboratory, in which Professor Münsterberg concedes that psychology is dangerous only to the teacher, and not to education itself.[5] Education *as science* ought to make the freest use of psychology. Quite a different standpoint! If experimental psychology is working on a wrong basis, on false assumptions, one wonders why education should recognize it under any conditions. Either it is dangerous to the teacher because its

[1] *Psychological Review*, July, 1898.

[2] Professor Münsterberg's attempt at justification (*Psychological Review*, September, 1898) will hardly make clear to the duped teacher (presumably now thoroughly alive to psychological imposture) why one psychologist should be allowed to speak inexactly, 'unphilosophically,' and another not.

[3] *Psychological Review*, November, 1898.

[4] *American Journal of Psychology*, April, 1898, p. 120; cf., also *Philosophical Review*, September, 1898, pp. 449 ff.

[5] 'Psychology and Education.' H. Münsterberg, *Educational Review*, September, 1898. "The student of education . . . can take the whole wisdom of psychology and physiology and remold it into suggestions for the practical teaching attitude," p. 128.

basis and methods are questionable (first position); or its position is justified[1] and its application to educational needs rests upon other grounds than fitness (second position). It seems fairer to the attacking party to judge him by his later and perhaps more deliberate utterances; at the same time, this dismisses the earlier argument.

The more serious questions with which we set out still remain; there is, however, additional evidence to be turned in. We shall see how much it helps to determine the vital relation of which we have spoken. There has been for some time a concern among conservative psychologists lest their science should hasten to become utilitarian. Thus Professor Titchener, writing as long ago as 1895,[2] urged that 'the work is its own reward,' and prophesied confusion, if psychology should be pursued "with overt reference to pedagogical application." He continued: "By doing that we cripple psychology; its investigations are not pushed to their ultimate analytic conclusions; and we lay upon pedagogy a burden of immature results, which in the long run will prove heavy indeed to bear. . . . . Psychology will make real progress only so long as her problems are investigated, leisurely and irresponsibly for their own sake." Concerning the means of communication between psychology and education, the same writer more recently suggests[3] that a "middleman" is needed to 'apply' psychology for the teacher. The position, he thinks, belongs naturally to the professor of pedagogy, who should know psychology, and know how to use it for the teacher. A little later a similar opinion was expressed by Professor Royce who pointed out that there is a lack of finality in psychology, and that while psychological problems are *sub judice* they do not furnish material suitable for direct pedagogical application. He proposes the "consulting psychologist" whose function shall be mediatory; he shall be the arbiter of psychological survival in the kingdom of education.[4] Again, Professor Münsterberg advises the establishment of "psycho-educational laboratories" which shall have a similar use. He would make the mediator, the "educational scholar," represent a separate science standing between psychological theory and the teaching profession.[5]

From the point of view of the teacher and educator, the evils of a utilitarian psychology do not appear. Naturally the standpoint is different. The pedagogical profession sees benefit arising to it from the closest coöperation of the psychologist and the teacher. Thus Professor Bliss (*loc. cit.*) writes: "surely no science should fear to be tested by the criterion of the practical." Genetic psychology, especially, he thinks, needs the teacher's contribution. This conclusion is again reached from the philosophical standpoint by J. S.

[1] "Experimental psychology . . . has conquered the whole realm of psychology." *Ibid.*, p. 132.

[2] *Philosophical Review*, IV, 123.

[3] *Journal of Education*, May 19, 1898, and also issues of June 30th, and October 27th.

[4] *Forum*, September, 1898.

[5] *Educational Review*, September, 1898.

Mackenzie, who suggests that psychology by throwing light upon mental development helps education in a general way to select its methods.[1]

The question is, how reconcile the various standpoints? Perhaps this problem will best work itself out in practice. As a matter of fact, is it not already doing so? There are scores of psychologists whose chief interest is practical: they have one eye always on application. They will not be expected to add much to 'pure science,' but so long as they know their psychology they need not abuse it. They have a very distinct function, and I am not sure that part of it does not lie in keeping a healthy atmosphere within psychology itself. Thus we see how arguments, both general and particular, have crossed and recrossed at various levels of the discussion. We have to ask, in conclusion, whether they further the settlement of the vexed problems which they attack. I am inclined to think that they do, at least they do the pioneer work of clearing the ground. There is now a fuller consensus on the interrelations of psychology and education, and on the proper attitude of each toward the other. The main problem, while not a new one, is assuming new proportions, and probably has a more vital interest to-day than ever before. And the net result? The danger both to psychology and to pedagogy from hasty application of unseasoned results has been repeatedly recognized, and nowhere denied. On the other hand, the sweeping statement that experimental psychology has nothing to offer the teacher turns out to be first a polemic against a 'special theory,' and afterward an opinion on the advisability of a pedagogical system, one of whose duties shall be to grind psychological wheat for the teacher. This is an opinion, I imagine, with which educators generally will be little inclined to quarrel. Whether the 'middleman' will turn out to be the 'psychological educator,' the 'professor of pedagogy,' the 'consulting psychologist,' or some one else, one can only guess at present. Until his advent, I suppose that the intelligent teacher will continue to use what psychology he can command (with the aid of the practical psychologist who has his interest at heart), falling doubtless into errors of interpretation—and this is not his fault, since psychology is not his profession—but withal getting signal aid and inspiration. The psychologist on his side, who has no interest in practice, has surely no call to change his line of march. While he is fighting his own battles there can be small reason for weighting himself with pedagogical impedimenta. The problems of education cannot be settled straightway by the exaggerations of an extremist; the backward swing of the pendulum does not at once bring it to the point of rest, especially if its momentum is augmented by a *deus ex machina* with purposes of his own. Still, the 'mean' is only found after the extremes have been indicated, so that it may perhaps be said that bad exaggerations, like 'bad books,' are of use in pointing out a more perfect way.

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[1] *International Journal of Ethics*, VIII, 4, 423.

Philosophy at the Scientific Associations.

In a recent address before the Anthropological Section of the American Association for the Advancement of Science, Professor Cattell declared that "from Aristotle to Kant the history of philosophy is in large measure the history of science." The intimate interdependence of philosophical and scientific conceptions in the past, is a fact which must be constantly kept in mind when studying the history of the development of thought. But there is no reason to suppose that this relation ceased after the time of Kant, or that at the present day the paths of philosophy and science lie wide apart. The current use of the terms 'science' and 'philosophy' may easily lead to an over-emphasization of the different kinds and methods of knowledge. In spite of differences of name, however, there is only one *Wissenschaft:* science, not less than philosophy, is the child of wonder, and strives to find unity and system in the world. The increasing integration, as well as the differentiation of knowledge, will, I think, impress anyone who reads the reports of the recent meetings of the British and American Associations for the Advancement of Science.

At the meeting of the British Association at Bristol, the President, Sir W. Crookes, closed an address[1] which contained many points of philosophical interest, with a reference to a belief expressed thirty years ago, "that outside our scientific knowledge there exists a Force exercised by intelligence, differing from the ordinary intelligence common to mortals." "I think," he went on to say, "that I see a little farther now. I have caught glimpses of something like coherence among the strange elusive phenomena; of something like continuity between those unexplained forces and laws already known." Moreover, Sir W. Crookes said, if he were now stating his conclusions for the first time, he would begin "with *telepathy*, with the fundamental law . . . that thoughts and images may be transferred from one mind to another without the agency of the recognized organs of sense—that knowledge may enter the mind without being communicated in any of the hitherto known and recognized ways." He then proceeded to suggest an hypothesis in explanation of this alleged fact. "If telepathy takes place," he says, "we have two physical facts—the physical change in the brain of A, the suggester, and the analogous physical change in the brain of B, the recipient of the suggestion. Between these physical events there must exist a chain of physical causes." The necessary connecting medium the author finds in ether vibrations, which he believes have powers and attributes equal to the demand. "The structure of brain and nerve being similar, it is conceivable that there may be present masses of nerve-coherers in the brain, whose special function it may be to receive impressions brought from without, through the connecting sequence of ether waves of appropriate order of magnitude."

It is at once obvious that very serious objections might be urged against the

[1] Published in *Science* of Oct. 28, and Nov. 4, 1898.

adequacy of this hypothesis, though it is purely physical in character, and constructed on the analogy of what we already know regarding the transmission of the stimuli for the recognized sense-organs. But no one, it appears to me, will take the theory very seriously until there is better evidence than yet appears of the existence of the facts which it is proposed to explain. The author of the address does nothing more than express his own conviction that such phenomena as he has described actually take place. "Confirmation of telepathic phenomena," he tells us, "is afforded by many converging experiments, and by many spontaneous occurrences only thus intelligible. The most varied proof, perhaps, is drawn from analysis of the sub-conscious workings of the mind, when these, whether by accident or design, are brought into conscious survey." Just how telepathy is to be proved in this way we are not told, and the whole reference to the matter should, perhaps, be taken rather as merely a confession of personal faith on the part of the speaker, than as a presentation of proof for a scientific hypothesis. The truth seems to be that in the investigation of abnormal mentality, there is—if we may judge from the example of those engaged in this field,—an almost irresistible temptation to confuse hypothesis and fact, or to accept principles of explanation which explain nothing, and thus to violate all the conditions to which a logical hypothesis must conform.[1]

A paper read before the chemical section of the British Association, by Professor Japp, of Aberdeen, has also awakened much interest, since it has been regarded as an argument for Vitalism. A number of interesting letters attacking the doctrine have appeared in *Nature*, as well as a defense, and what appears like a modification, of the position by the author. We may adopt Professor Karl Pearson's summary of the original argument (*Nature*, September 22d), and also refer briefly to the objections which he raises against it, as well as to Mr. Spencer's letter (*Nature*, October 22d). The substance of Professor Japp's paper is stated in the following propositions: (1) Optically active liquids are due to asymmetrical molecules. (2) These asymmetrical molecules arise from the replacement in a symmetrical molecule of either a right-hand or a left-hand atom out of two equal atoms which are images of each other. (3) No optically active substance can be formed unless there be a selection of purely right-handed or purely left-handed atoms, or, at any rate, unless there be a sensible majority of one or the other. (4) Some asymmetric solvents have a power of selective action on optically inactive mixtures of right-handed and left-handed atoms, or, to use the technical term, of two enantiomorphs. (5) No mechanical process (chemical or physical) could select a right-handed as distinguished from a left-handed atom in a symmetrical molecule, and so produce an asymmetric compound. — In replying to this position, Professor Pearson assumes that it only requires a

[1] For some excellent remarks on this subject, as well as for an illustration of scientific methods in this difficult field, see Professor Patrick's paper—"Some Peculiarities of the Secondary Personality"—in *Psychological Review*, Vol. V, pp. 555ff.

certain *majority* of left- or right-hand enantiomorphs to produce an optically active substance—pointing out that it might be determined by delicate experiments on the rotatory power of mixtures of dextro- and lævo-acids which are mirror images of each other, how great the majority must be. Now, if chance is the factor at work in the production of optically inactive mixtures of right- and left-handed enantiomorphs, in the course of indefinite ages purely mechanical causes must have produced chemical compounds of one-sided asymmetry with various degrees of rotatory power, due to the greater or less frequency of the enantiomorphs. "In nature, where, during countless ages, inorganic actions and reactions must have taken place, the production of chemical compounds of one-sided asymmetry must, on Professor Japp's view of the relation of mechanical action to chance, undoubtedly have taken place." At present, Professor Pearson thinks, we must remain agnostic regarding the possibility of living matter originating from dead matter by a purely mechanical process. Against the alleged inconceivability of the mechanical view, however, he contends that, on Professor Japp's own showing, the inorganic origin of optically active compounds is not only conceivable, but has a degree of probability which might be calculated when we know what is the minimum number of compounds in a physically just sensible solution, and what is the majority of enantiomorphs which will give a just measurable amount of rotatory polarization?

Mr. Spencer also criticises Professor Japp's assumption that a mixture of asymmetrical molecules could not be formed without the action of something like a vital force. Professor Japp, Mr. Spencer says, has taken no account of the universal law of segregation, which has been formulated in the second part of the *First Principles*. After formulating this law, Mr. Spencer proceeds: "Now, from this process of segregation it must have happened that when dextro- and lævo-protein were simultaneously formed, the two kinds of molecules, differently related to environing actions (say ethereal undulations alike in nature and direction), separated themselves into groups of their respective kinds." It is true, Mr. Spencer argues, that in consequence of the small differences between the two classes of molecules the minute differential of the forces might be long in producing their effects; and, further, the segregation might be hindered by restraining forces. But slowly or quickly it would surely take place. "And then the molecules of either group would exhibit just that optical activity which Professor Japp, following Pasteur, alleges can only result from molecules formed by vital action." Mr. Spencer goes on to say that neither the physico-chemical nor the vitalistic interpretation of life is adequate, and refers to the recently revised edition of *The Principles of Biology*, in which he has maintained that "the vital principle fails and the physico-chemical theory also fails; the corollary being that in its ultimate nature life is incomprehensible."

Professor W. F. R. Weldon's address as President of Section D (Zoölogy) on 'Natural Selection' (*Nature*, September 22d), deals with difficulties

which have been brought against the theory. In discussing variations, the author deals in a very important way with the logic of chance, referring to the work which has already been done in this field by Francis Galton and Karl Pearson. This paper has also called out a number of letters in opposition to its conclusions, which have appeared in recent issues of *Nature*.

When we turn to the account of the Boston meeting of the American Association, as published in *Science*, we likewise find much which is of interest and significance to the student of philosophy. Four addresses delivered by vice-presidents of the different sections are specially worthy of mention. These are: 'Color Vision' (delivered before Section B, Physics), by Professor F. P. Whitman, of Adelbert College (*Science*, Sept. 9th); 'A Half Century of Evolution with Special Reference to the Effects of Geological Changes on Animal Life' (delivered before Section F, Zoölogy), by Professor Packard (*Science*, Aug. 26th, Sept. 2d and 9th, *The American Naturalist*, Sept., 1898); 'The Conception of Species as Affected by Recent Investigations on Fungi' (delivered before Section G, Botany), by Professor W. G. Farlow, of Harvard (*Science*, Sept. 30th, *The American Naturalist*, Sept., 1898); 'The Advance of Psychology' (delivered before Section H, Anthropology), by Professor J. McK. Cattell, of Columbia (*Science*, Oct. 21st). The paper read by Professor H. S. Williams before the Zoölogical Section on 'Variation *versus* Heredity,' is also of special interest at the present time (*The American Naturalist*, Nov., 1898). It is impossible here to present a summary of these papers. Professor Cattell's reference to Parallelism in his address has been noticed by Professor Lloyd in his article in this number of the REVIEW. J. E. C.

The following changes have recently taken place in the philosophical chairs of the German Universities: The vacancy at Kiel, caused by the departure of Professor Riehl for Halle, has been filled by calling Professor Götz Martius, from Bonn. Privat-Docent Dr. Erich Adickes has also been appointed Professor Extraordinarius at Kiel. Professor G. Thiele has been called from Königsberg to Berlin, and has been succeeded by Professor L. Busse, of Rostock. Professor Karl Groos has gone from Giessen to Basel, and Professor P. Hensel has accepted a call to Heidelberg as Professor Ordinarius.

The Welby Prize, offered for the best essay on "The Cause of the Present Obscurity and Confusion in Psychological and Philosophical Terminology," has been awarded to Dr. Ferdinand Tönnies, of Hamburg. The paper will be published in an early number of *Mind*.

Dr. Robert Zimmermann, formerly Professor of Philosophy, died recently at Salzburg. He was regarded as one of the leaders of the Herbartian School.